VOL. X, NO. 2 OCTOBER, 1910

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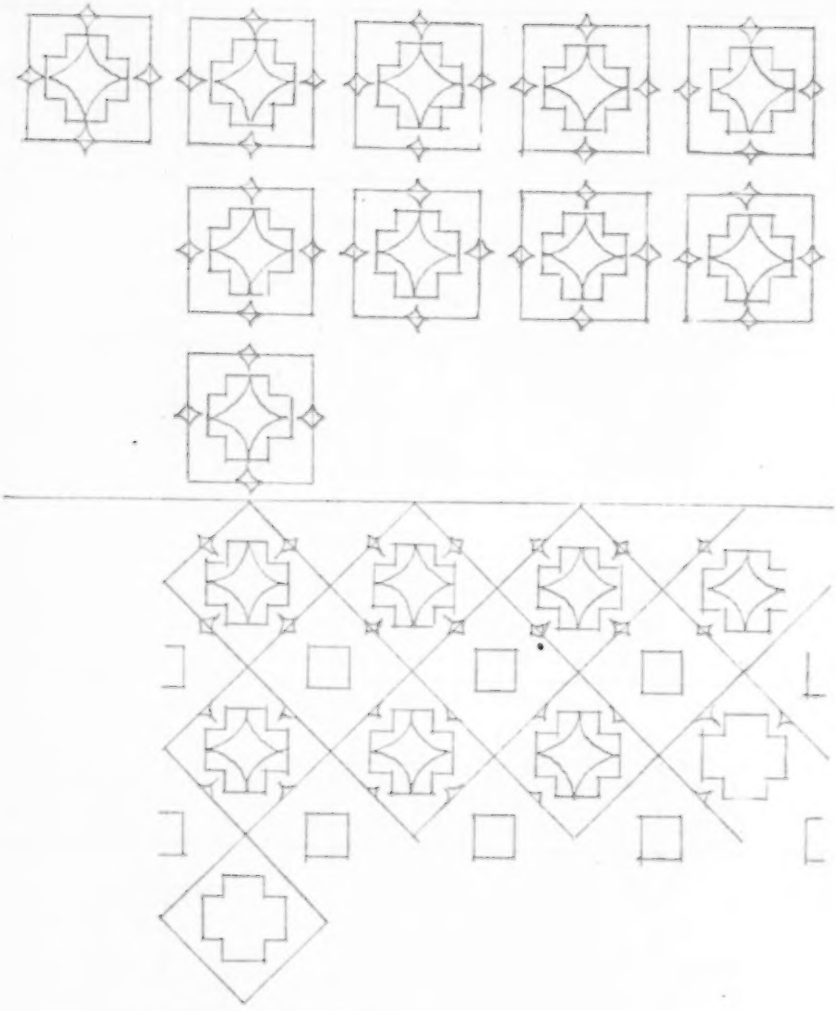
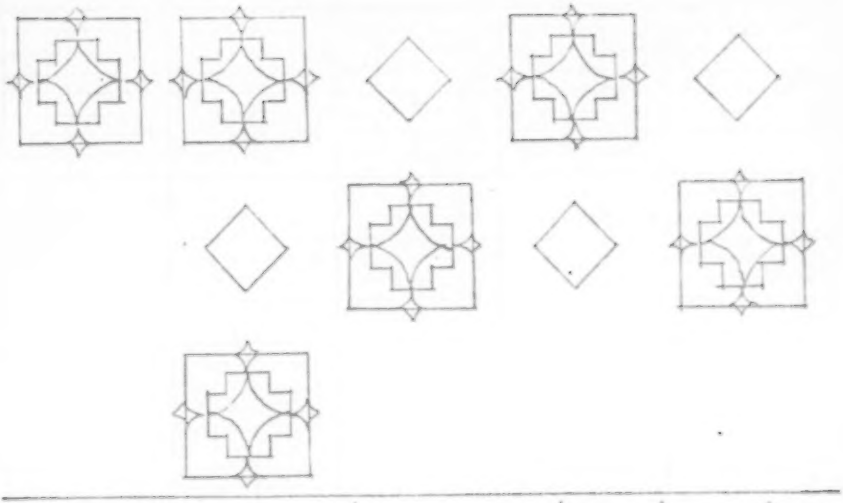
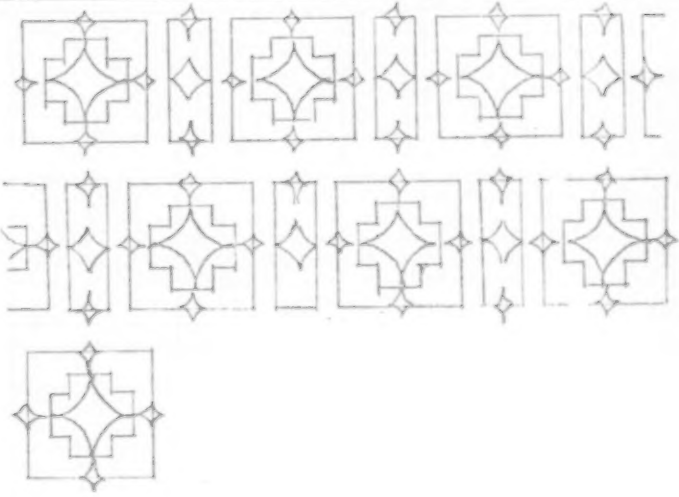
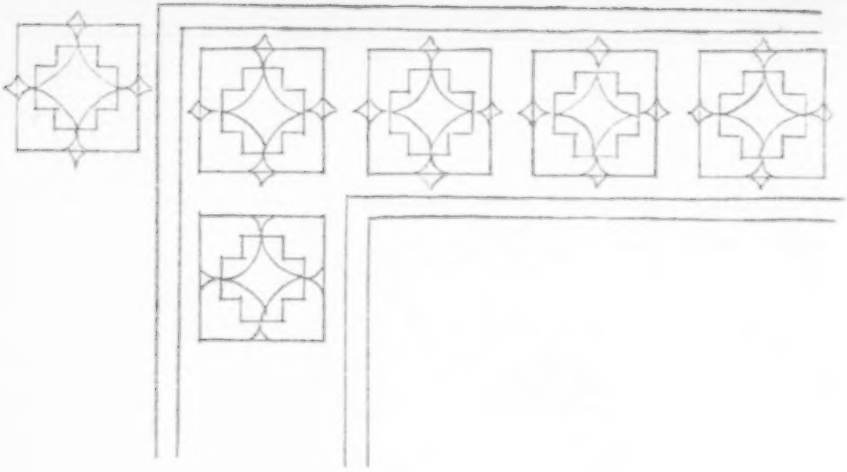


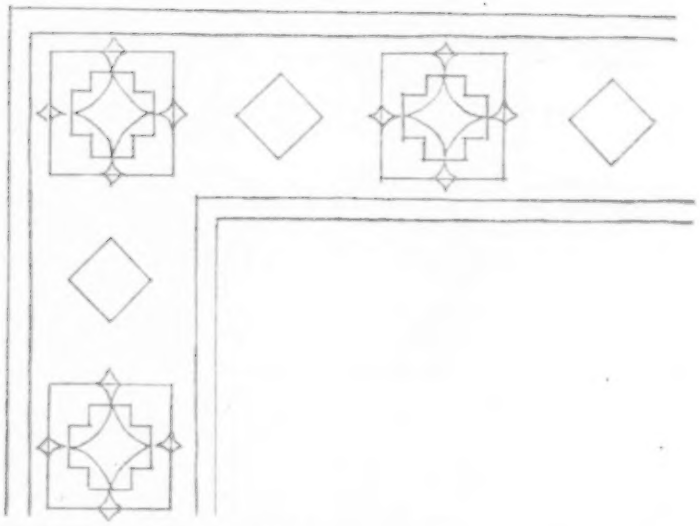
FIFTH EXERCISE
THE UNIT THAT HAS BEEN USED IN ALL
THE EXERCISES USED IN A SIMPLE
REPEAT AND IN DIAMOND FORM
ALTERNATING WITH A SMALL SQUARE



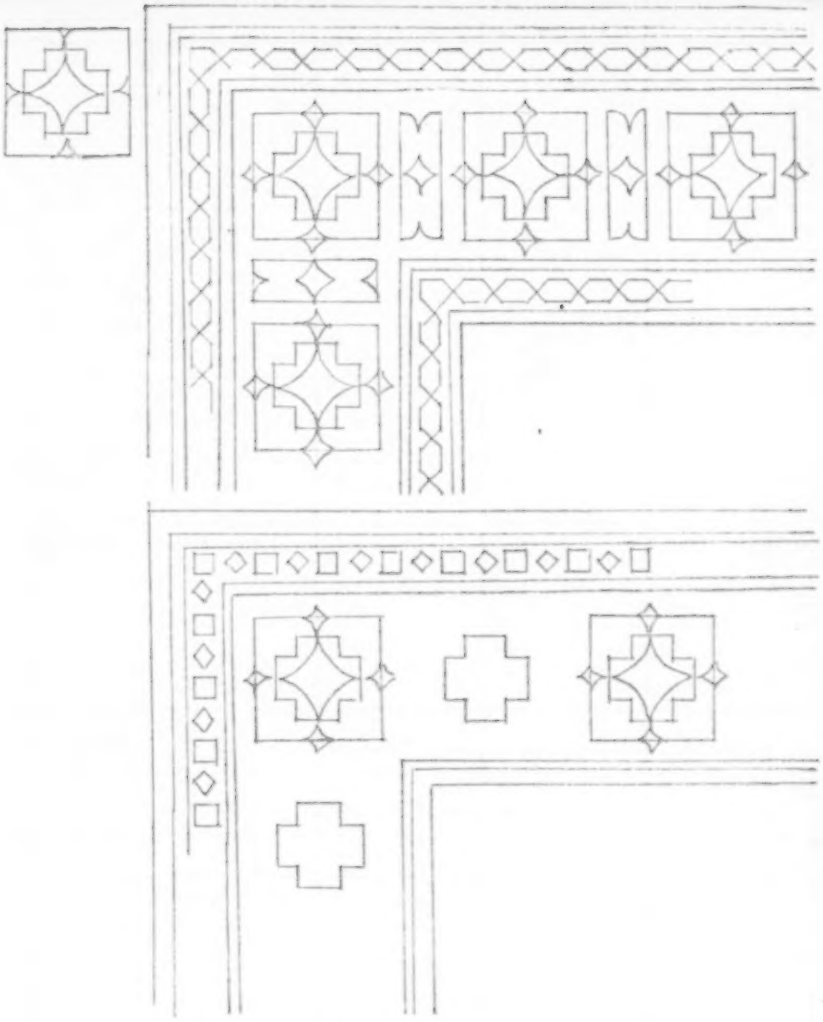


SIXTH EXERCISE
THE UNIT THAT HAS BEEN USED IN ALL THE EXERCISES USED IN A REPEAT ALTERNATING WITH A DIAMOND AND WITH AN OBLONG TREATED AS THE SQUARE IS TREATED





SEVENTH EXERCISE
THE SAME UNIT REPEATED AT
REGULAR INTERVALS IN A BORDER
AND REPEATED ALTERNATING WITH A
SIMPLE DIAMOND



EIGHTH EXERCISE
THE SAME UNIT ALTERNATINTING WITH THE OBLONG USED IN SECOND HALF OF SIXTH EXERCISE IN A BORDER WHICH HAS A SIMPLE SECONDARY BORDER ON EITHER EDGE IN SECOND HALF OF THIS EXERCISE THE UNITE ALTERNATES WITH A SIMPLE CROSS.

The School Arts Book

Vol. X OCTOBER, 1910 No. 2

THE WORLD OF COLOR

TO lead children to see color, to enjoy fine coloring, and to combine colors harmoniously, is the threefold aim of instruction in color.

The consensus of opinion among psychologists seems to be that owing to the structure of the human organism, and the way in which it matures, the power to perceive color grows with the growing child. The brain responds first to brilliancy, rather than to any particular hue of color; then to the most brilliant hues, yellow, orange, red; next, to intense blue, then to green, and lastly to purple in its purity. The perception of grayed colors, and of subtle differences of hue comes much later.* A child's first interest in color usually manifests itself in "a propensity to classify things according to their color."† This classification proceeds first along the lines of similarity of hue, or likeness of color, and culminates in the perception of opposites.‡ If these conclusions are sound, there can be but one order of procedure in leading children to observe color, namely, from the brilliant to the subdued; from the strong to the weak; from the unmistakable to the uncertain. Consequently, in teaching children to combine colors harmoniously we must proceed from the use of a few well defined colors to the use of several closely interrelated colors. The enjoyment of fine coloring is possible at every step, for the cream white, jet black, and flaming scarlet of a poppy

* "A gaudy picture book will drive children wild with delight, even at the age of three, while the paintings of a master do not appeal to them at all." — Bernard Perez.

† Sully. Studies in Childhood.

‡ See Extracts from a Father's Diary, published by Sully in his Studies of Childhood. Compare also Preyer, Barnes, Hall, et al.

or of a medieval manuscript is just as beautiful, in its way, as the green-grays and browns of a lichen-covered stone, or of a nocturne by Whistler.

The first beauty of color is Purity.* In the solar spectrum, flashed into the schoolroom by means of a prism, we have, therefore, a standard of color at once appreciable by the five-year-old mind, and beautiful because of its spotless purity. Within the spectrum the six principal colors, which must inevitably form the basis of that classification of objects by color which naturally follows, are easily recognized by the children, and imitated with great satisfaction on their part, by the use of good crayons or water colors.† The classification of all sorts of colored objects, in a general way, by means of these principal colors, red, orange, yellow, green, blue, purple, will further develop the growing power to perceive color. In making such classifications children early discover differences described by the terms "lighter" and "darker"; later they are able to distinguish "warmer" and "cooler" hues of color; and lastly to discover in a given hue the presence of its opposite, as manifest in a certain quality of gray, never noticed by the untrained eye.

Each new discovery of relationship makes possible an immediate utilization of the knowledge in some useful way. Lighter and darker colors may be combined in a bit of printing or weaving to exemplify the beauty of related tones of one color — unity in color effect; related hues of color may be used in the painting of a vase or in a piece of embroidery to ex-

* Compare Ruskin, Modern Painters, I: 225; II: 266; and Laws of Fésole, Chap. VII. "Our reprobation of bright color is, I think, for the most part, affectation. Our greatest men still delight, like the great men of all ages, in brilliant hues." Modern Painters, III, 281.

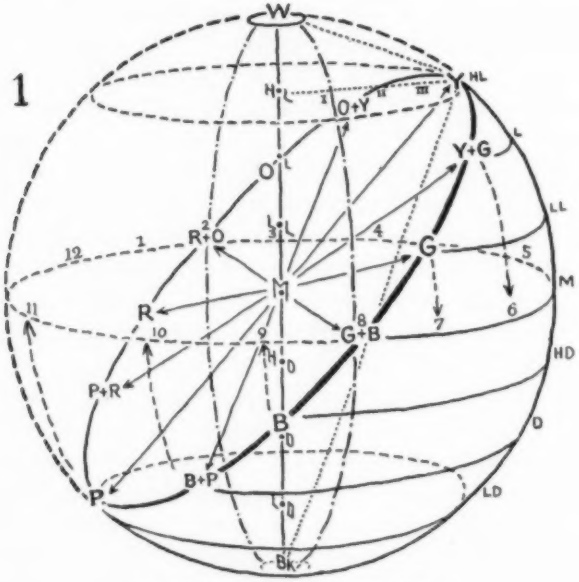
† This cannot be done successfully (without too great loss of purity) except by means of six standard pigments, such, for example, as those first prepared by Milton Bradley.

emplify the beauty of variety within the limits of unity; contrasting colors may be merged in rendering a spray of autumn foliage or in a design for a couch pillow to exemplify the beauty that comes thru the reconciliation of opposites — unity even with diversity.*

Not until the pupil reaches the high school should he be required to consider anything like a theory of color. Dr. John W. Dickinson, of Massachusetts, used to say that in the high schools all topics are to be pursued as sciences, organized bodies of knowledge to be studied analytically. All the individual facts, processes, results, of elementary instruction should here be seen as forming parts of the larger whole. It is essential, therefore, that the supervisor of drawing should have a working theory of color as a guide to the selection of exercises in color in the elementary grades. Every exercise should count in the right direction. The pupil coming to the high school should have only useful fragments of knowledge, only such ideas as may be slipped into place in the science of color.

But is there a science of color? Yes; in the making, like all other sciences. Perhaps the science of color is not yet so far along as, for example, the science of chemistry; but as I see it, the color chaos has at least taken on the form of a sphere, and that is something definite and reasonable. This sphere may be conceived as having features comparable to those of our globe: a north pole of light, a south pole of darkness, a surface of color; parallels of latitude, locating degrees of tint and shade; meridians of longitude, locating the different hues; and a great circle of intensities mimicking the ecliptic. The archetype of this color globe, of pure light, may be a perfect sphere, of

* "The general law must be to practise first in pure color, and then, as our sense of what is grave and noble in life increases, to express what feeling we have of such things in the hues belonging to them." — Ruskin.



The world of color in linear form.

which the solar spectrum presents the belt of the ecliptic; but the reality with which we have to deal is a globe much like the earth, dependent on such material pigments as we have in common use, and therefore presenting marked irregularities of surface.

The diagram, Figure 1, will serve to bring more clearly before the mind this sphere of color.*

Let us think of W as the north pole of the sphere, of pure white; of Bk as the south pole of pure black; of the axis of the sphere as a core of gray, perfectly graded from white to black.

* "The sphere as figure has been familiar to the physicists for a century, but it has been brought into prominence and put into tangible form by Mr. Albert H. Munsell of the Massachusetts Normal Art School, Boston.

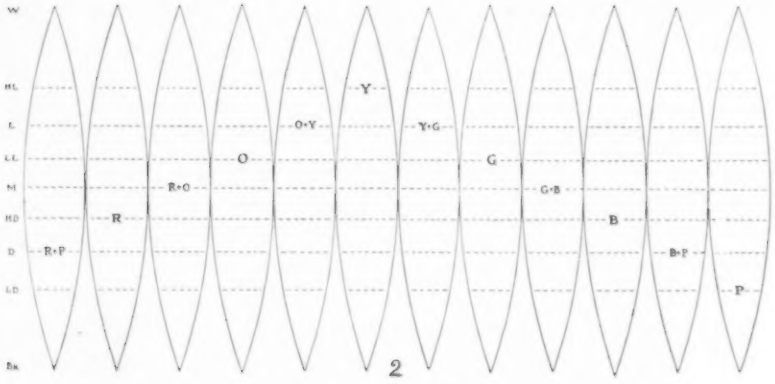
Certain points in this core may be located and named: the central point M is middle gray, a gray half way in value between white and black; the point midway between this center and white is designated as light (L); the corresponding point below the center as dark (D); other intermediate points, as high-light (HL), and low-light (LL), and as high-dark (HD), and low-dark (LD).* Horizontal planes passed through these points give the parallels of value on the surface of the sphere, as indicated at the right in the diagram.

Let us think of the surface of the sphere as composed entirely of color, all the possible pure tints and shades of one color, for example, vermilion, arranged in an orderly series from lightest to darkest on the meridian running in the diagram from W down the farther side of the sphere thru R+O to Bk; and all possible pure tints and shades of the most strongly contrasting color (the color of the egg of the gray thrush or catbird) arranged in a similar series from lightest to darkest, on the nearer half of that same meridian, in the diagram, from W thru G+B to Bk. Now think of other meridians, with other series of tints and shades: the nearer half of the meridian passing down thru G with all the pure greens upon it; the other half passing down thru R with all the pure reds upon it; and so on in orderly fashion around the entire surface of the sphere. Now if all our pigments were the same in strength of color or intensity or "chroma" (for the

* We are indebted to Dr. Denman W. Ross of Harvard University, Cambridge, for this simple and adequate subdivision and nomenclature. Mr. Munsell employs a scale in which the intervals from pigmentary black to pigmentary white are designated by N and an exponent. The two scales correspond as follows:

N1, N2, N3, N4, N5, N6, N7, N8, N9 (Munsell).
Bk, LD, D, HD, M, LL, L, HL, W (Ross).

Mr. Munsell's Chart A, of his Atlas of the Color Solid, presents a perfect neutral scale, ingeniously adapted to the accurate testing and recording of the value of any color. The Atlas is published by Wadsworth, Howland & Company, Boston.



The developed surface of the world of color, with initials indicating points of highest intensity.

three words mean the same thing), our sphere would be perfect. But, alas, they are not. Some are strong and some are weak. Some are so intense that they stand out above the others like mountain peaks on the globe. Some are so dull that they fall below others, like deep valleys.*

If from the surface of our color sphere we could peel off the colored strips, as we might peel an orange, with a meridian central in each, we would find, as shown in Figure 2, that the strongest spot made by our pigments in the yellow strip would be towards the top, at Y; while the strongest spot in the purple strip would be towards the bottom, at P. We would find that the spots of most intense color in the other strips would follow a certain order.† This order indicated in Figure 2 by the

* The irregularities were not so great until recently when the chemists gave us the aniline dyes. Probably the Mount Everest of the color globe is now a purple-red, while the Dead Sea depression is filled, appropriately, with a green-blue.

† This relationship between the natural intensities of the different colors and the scale of values suggested years ago by Ruskin, was worked out in detail and first charted by Dr. Ross.

abbreviations, is shown on the sphere, Figure 1, by the oblique section. This great circle of maximum intensities marks in a general way, the mountain chain of brilliant colors, girdling the sphere as the great "horse-shoe ridge of the world," from Cape Horn thru Alaska, across Asia to the Cape of Good Hope, girdles the earth.

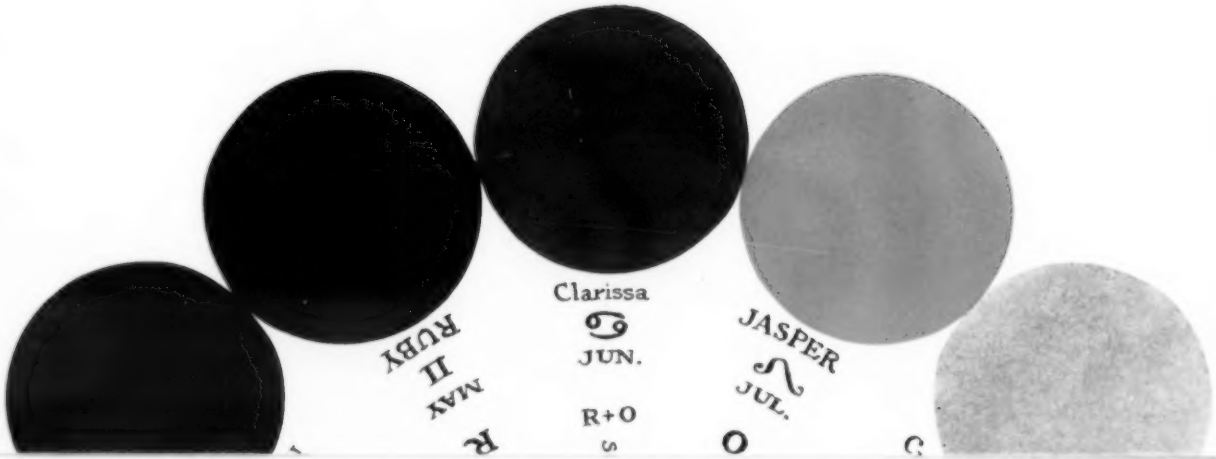
Theoretically, the color changes by subtle transitions from hue to hue without break, following the spectrum order throughout this belt of purest color.* Colors diametrically opposite in this belt are supposed to complement each other when mixed. Here again theory and practice often part company. Hues complementary in the sphere of light are not complementary in the pigmentary sphere.

To secure a diagram representing a section of the color sphere, taken on this ecliptic of brilliancy, in which the opposite hues are complementary, has been the aim of almost every student of color since the days of Sir Isaac Newton. In this country the first to work it out in a form available for the schoolroom was Milton Bradley. He did not attempt to secure a division of the circuit into equal intervals. His aim was to establish six absolutely pure standard colors, — a red, for example, with no trace in it of either purple or orange; a green impartially intermediate between yellow and blue, — and having established these, to determine with scientific accuracy their exact complements. His result is six pairs of contrasting colors. Dr. Ross has aimed to determine complementary hues at equal intervals. His results therefore vary slightly from Mr. Bradley's. The red which Dr. Ross selects is complementary to the green that he selects; for the

* It is understood, of course, that hues making the transition from purple to red have been added to complete the circuit. They are not found in the spectrum itself.

reason that neither one corresponds exactly with Mr. Bradley's standards of pure color. The six principal colors of Dr. Ross thus form three pairs of contrasting colors, and the three other pairs are secured by the selection of intermediates. Mr. Munsell has divided the circle into ten parts instead of twelve. By omitting the name orange, his principal colors are reduced to five. Having an odd number of divisions, the opposite end of a diameter from any one of the five principal colors falls midway between two others. The result is five pairs of contrasting colors, one of which in each would be quickly recognized as a standard, were it exhibited in its purest form. But Mr. Munsell simplifies the problem by banishing the brilliant colors from the face of his earth. He recognizes their presence above or beyond, but they are not found on the surface. In other words, Mr. Munsell has put his earth into a lathe and has turned off all its irregularities, thus reducing its whole surface to the level of the weakest pigment.* Perhaps this is necessary, as Mr. Munsell so logically argues; but alas, the result is not the world we have loved. All the glorious golden mountain peaks have disappeared, the emerald hills and the high-lying lakes of purest blue no longer exist, even the plains dotted with flowers have gone. Everything has been reduced to the Dead Sea level. Moreover, Mr. Munsell has "revolved" the ecliptic until it coincides with the equator, thus disregarding, on the surface of his sphere, the natural differences in the values of the different colors. The entire spectrum circuit is thus reduced to middle value. In other words, Mr. Munsell's "standards" are to be found in the equator of the sphere, Figure 1, somewhere near points 3, 5, 7, 10, and 12, the yellow, of course, very much dulled and degraded, and the purple very much faded and weakened.

* See A Color Notation, Munsell, p. 52.


MAX
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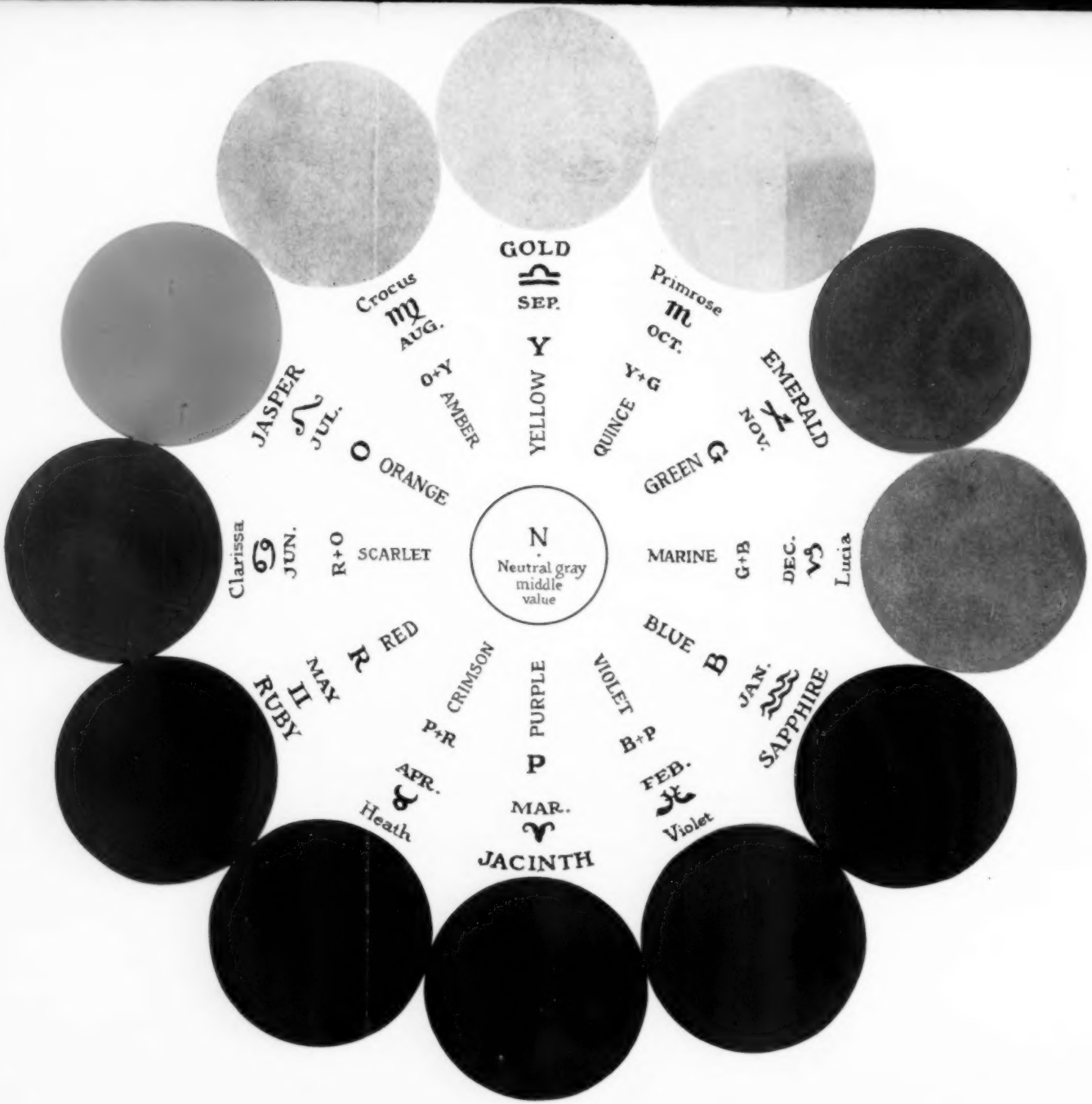

GOLD
SEP.
Y
YELLOW
Crocus
AUG.
O+Y
AMBER
Primrose
OCT.
Y+G
QUINCE
JASPER
JUL.
O
ORANGE
EMERALD
NOV.
GREEN
G
Clarissa
JUN.
R+O
SCARLET
N
Neutral gray
middle
value
MARINE
G+B
DEC.
Lucia
RUBY
MAY
R
RED
CRIMSON
P+R
PURPLE
P
VIOLET
B+P
BLUE
B
JAN.
SAPPHIRE
APR.
Heath
MAR.
JACINTH
FEB.
Violet

The circuit more in harmony with ordinary experience and practice is that first defined by John Ruskin in his Laws of Fésole, Chapter VII, as the Twelve Zodiacal Colors, and reproduced in color herewith, as supplement. Its red, orange, yellow, green, and blue vary but slightly from the "standards" of Milton Bradley, and all of its other colors correspond with some of Mr. Bradley's "standard hues." It is practically the circuit of twelve colors adopted by Dr. Ross, the only important variation being in the "jacinth" or purple. This circuit of twelve colors is thus described by Ruskin:

"They form a luminous gradation, in which the uppermost, Or,* is the lightest, and the lowest, Jacinth, the darkest hue.... Every one of the twelve zodiacal colors has thus a pitch of intensity at which its special hue becomes clearly manifest, and above which, or below which, it is not clearly recognized, and may, even in ordinary language, be often spoken of as another color .... Nevertheless, in strictness, each color is to be held as extending in unbroken gradation from white to black, thru a series of tints, in some cases recognizable thruout for the same color .... The principal use of this zodiacal arrangement is that each color is placed over against its proper opponent;—Jacinth being the hue which most perfectly relieves Or, and Primrose the most lovely opponent to Heath. The stamens and petals of the sweet-william present the loveliest possible type of the opposition of a subtle and subdued Lucia to dark Clarissa. In central spring on the higher Alps, the pansy (or, where it is wanting, the purple ophryds,) with the bell gentian, and pale yellow furred anemone, complete the entire chord from Or to Jacinth in embroideries as rich as those of an Eastern piece of precious needlework on green silk. The chord used

* Mr. Ruskin's word for gold considered as a color.

in the best examples of glass and illumination is Jasper, Jacinth, and Sapphire, on ground of Or: being the scarlet, purple, and blue of the Jewish Tabernacle, with its clasps and furniture of gold. The best Rubrics of ecclesiastical literature are founded on the opposition of Jasper to Sapphire, which was the principal one in the minds of the illuminators of the thirteenth century . . . . It may yet be found useful, as an aid to memory for young people, to associate in their minds the order of the zodiacal colors with that of the zodiacal signs. Taking Jacinth for Aries, Or will very fitly be the color of Libra, and blue of Aquarius; other associations, by a little graceful and careful thought, may be easily instituted between each color and its constellation; and the motion of the Source of Light thru the heavens, registered to the imagination by the beautiful chord of his own divided rays." *

Ruskin's nomenclature is somewhat fanciful, and yet we do need definite names for the intermediate pairs of colors which are indicated in the chart by the combined letters. In common use we have Violet, which is the best name for B+P; and Crimson which well describes P+R. Scarlet corresponds to R+O. Amber might do for O+Y. For the two hues remaining we have no terms in common use except "apple-green" and "sea-green" or "aqua marine." Y+G might be called Quince; and G+B Marine. These names would yield six initials, other than the six used to designate the standards, useful as abbreviations. Our need of using these names becomes evident when we consider the problem of teaching children. In observing color in nature and in describing it, the simplest possible basis of classification and the simplest possible terminology are best. These are illustrated in Figure

* See Laws of Fesole, Chapter VII.

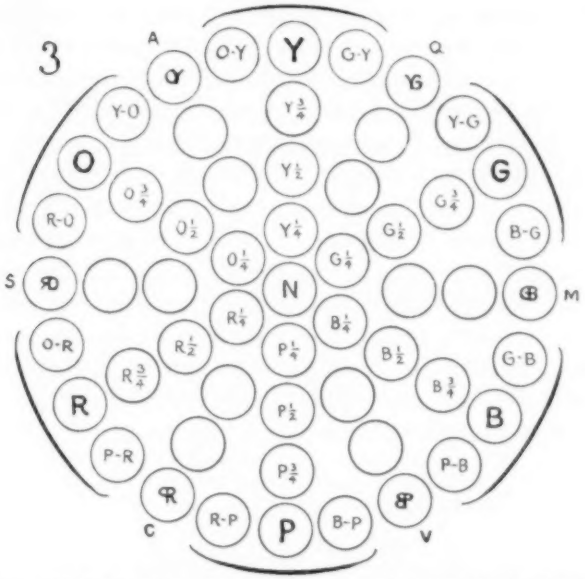


Diagram of selected tones based on a section of the world of color taken upon the plane of the ecliptic.

3. Any object presents to the eye a color at once referrable to one of the six standards. The object is, let us say, a green thing. Closer observation enables us to say that it is standard green, or is warmer, or cooler than that standard. It may be described, therefore, as yellow-green, or standard green, or blue-green. Green thus appears as a family name, and all greens belong to that family. Of course, there is also a yellow family, a blue family, etc. But where these families run together, or divide, is a point where two standards meet in a color which belongs equally to both, or to neither. This point, this color, needs to be named. We may write it YG, as Dr. Ross does, or GY, as Mr. Munsell does, or Y+G, as Mr.

Bradley used to do. But we need YG for a yellow-green, and we need GY for a green-yellow. We are driven, therefore, to Mr. Bradley's use of the +, or to adopt a monogram, a diphthong, as shown in Figure 3, in which the two initials become one character, or to give the hue a name of its own, and designate it by its initial. This need not be done below the high school. To classify colors into six families, each having three divisions, is all children should be expected to do in the elementary schools.

So much they should be required to do, however, not only to enable them to observe and describe intelligently the colors they find in nature, but to enable them to produce pleasing combinations of color.

There are but five typical combinations, which may be readily grasped by children:

I. A single color with neutrals (white, gray, black).
II. Two or more tones of one color.
III. Two or more similar colors.
IV. Two contrasting colors.
V. A group of related tones or colors plus a contrasting color or group of colors.

In the first, pleasing combinations may be produced without reference to the value or intensity of the color, for the effect is governed largely by the relative areas occupied by the tones.*

In the second, a pleasing combination is often produced when the tones do not correspond to the named points in the scales of values, for the effect depends merely on well defined, or smoothly graded tones.

* In printing, where black ink is used on white paper, the white predominating, scarlet or vermilion is the historic color. It happens to be the only pigmentary color which is at its best in middle value, contrasting equally, therefore, with both white and back. Any other color reduced to middle value looks well with black on white paper, for example, Mr. Munsell's "standards."

In the third, a pleasing combination is produced by closely related hues.* The effect depends largely on slight but balanced differences in both hue and value.

In the fourth, a pleasing combination is produced by hues, each of which is toned by the other. When placed on a contrasting neutral ground (or when outlined in white, black, or gold, which amounts to the same thing), the two may be of the same value.

In the fifth, a pleasing combination is produced through the predominance of one tone, made more evident by the presence of a subordinate contrasting tone.

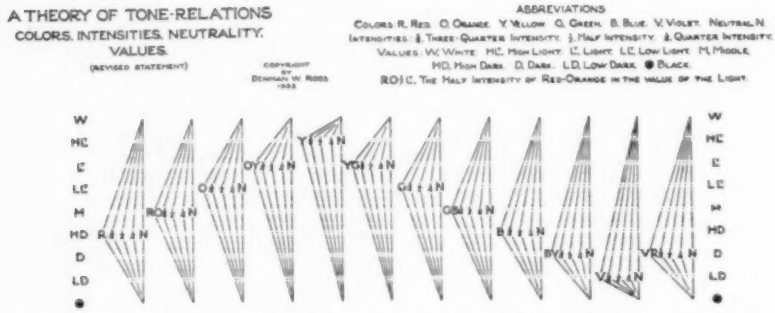
The study of examples of pleasing combinations of color, and practice in balancing tones lighter and darker over a central tone, or warmer and cooler over a central hue, and of balancing contrasting colors over middle gray, are sufficient to insure good results in color combination in the elementary grades.†

But the Spectrum Circuit, valuable as it is, does not present to the eye an adequate diagram of color, for at best it shows no tints and shades of color.‡ To do this, Mr. Munsell holds to the sphere. Revolving the ecliptic of pure color until it coincides with the equator (Fig. 1) makes possible an equal number of tints between all the "standards" and white, and an equal number of shades between all the "standards" and

* As the intervals become greater the colors must be correspondingly reduced in intensity if a pleasing result is secured. For beginners, therefore, closely related colors, such as those made possible in a circuit like Figure 3, are desirable.

† Figure 3 illustrates such a balancing of contrasting colors. The fractions, for which we are indebted to Dr. Ross, indicate the degree of intensity or chroma of the given tones. N, in the center, indicates neutral gray of middle value. The whole may be thought of as a section of the color sphere, Figure 1, on the plane of the ecliptic, but more finely subdivided.

‡ That is, tones of color produced, theoretically, by adding light (to make the tints) and darkness (to make the shades) to the standard colors, thus changing their value without changing their intensity or "chroma."



A diagram indicating the positions of both external and internal tones in the world of color. Each triangle represents a section of the sphere taken upon a meridian and extending to the axis. Reproduced by courtesy of Dr. Ross.

black. This is convenient but somewhat misleading, for in practice it is impossible to distinguish, for example, as many equal steps in value between full yellow and white as between full purple and white. Milton Bradley produced a "Mercator's projection" of the color globe and spread thereon scales of five tones of each color (not including white and black), balanced over the standard, without regard to its relation to middle gray. Dr. Ross makes use of the "Mercator's projection," but keeps each standard at its proper latitude. This makes impossible the charting of pure tints of yellow or pure shades of purple.* It gives, however, three tints above Scarlet (RO) and three shades below it, and a corresponding scale in "Marine" (GB). Dr. Ross does not stop here. He wishes to exhibit also the very heart of the color world. This he does in an ingenious diagram, Figure 4, composed of triangles, the long side of each of which corresponds with the central axis of the sphere, Figure 1. The other sides of each triangle represent lines drawn from the poles of the sphere

* See A Theory of Pure Design, p. 139.

to points on the surface. For example, the yellow triangle has for its long side W Bk (Fig. 1); for its other sides W Y and Y Bk. Points marked Y+G, G, G+B, etc., locate the apeces of the other triangles. On these triangles, arranged as shown in Figure 4, it is possible to indicate approximately the tints and shades of all colors, pure and in four degrees of intensity at each value.* Upon this as upon a harp all harmonies of color can be played.† But this chart is for high school and collegiate students.

Mr. Wilson of the Art Institute, Chicago, believes that he has discovered a color instrument upon which children may be taught to play harmonies only. While his method of approach is entirely different, his "musical scales of color" look very much like some of the "sequences on the diagonal" given by Dr. Ross. Until Mr. Wilson gives us boxes of pigments corresponding with his different "keys" we can scarcely understand his theory, much less put it into practice.‡

Whatever progress may be made in the theory of color combinations, the color sphere will probably stand fast as the best thinkable form under which to classify all colors. This color sphere should be a part of the supervisor's mental equipment, a luminous, transparent globe of celestial color, out of which beautiful harmonies of color shall spring as flowers or be mined as gems from the earth. Towards the gradual building of this concept in the mind of every man and woman, all the lessons in color in the elementary grades should contribute.

HENRY TURNER BAILEY

* Scales of intensity are exhibited perfectly in Mr. Munsell's latest chart, a mechanical masterpiece, Chart B, in his Atlas of the Color-Solid.

† And also all discords! See A Theory of Pure Design, p. 156.

‡ One such "key" is given in Mr. Wilson's article in this number of the magazine, p. 129.

COLOR EXPERIMENTS

THERE are in the schools some teachers who are beginning to think that the making of color scales in the grades does not lead anywhere. The time limits and the immature age of the pupils both seem to suggest that in our color work it is better to aim directly at the application of color. The color scale may be likened, they say, to the preliminary elliptical flourishes of the amateur penman before he settles down to write as he always has written. Color scales are made to emphasize the idea that there must be order in the employment of color values, hues and intensities, as in the lines and masses in design. Perhaps that order may be emphasized as well, in the grades, in the application to a usable idea as to useless circles.

There are three definite problems herewith suggested, the rug, the picture and its frame, and the couch. The drawing of each is simple as it ought to be, color being the subject of our lesson. The rug is perhaps the easiest. The design is unimportant, except to note that there ought to be a variety in the areas in the design; for example, a large area, a small one, and one somewhere near half way between the two.

The picture represents a photograph. We may buy brown, gray, green photographs, or blue-prints. We may choose our own color for the picture, bearing in mind only that any color which we may choose is best when rather gray in its intensity, because such a picture is more apt to agree with any background against which it may be placed. To paint the landscape, put in the sky with a light wash of the chosen color, and while wet add the trees and foreground in darker values of the same color.

The picture is unimportant, its relation in color to the frame is the real problem.

The couch is easily drawn on six by nine paper by drawing the top horizontal line, followed by the two side vertical

lines, etc. In all these drawings a broad gray line adds to the decorative effect of the final product.

There are at least three ways of working out these problems in color in the grades. The first and simplest method is to use three values of one color, a light value, a middle value, and a dark value. To get these values equally distant is the problem. It can seldom be done right the first time, but any color value may be gone over and over (allowing each painting to dry before another wash is placed over it). It is undeniably a fact that children are more easily satisfied with their results in color than with their form designs. They are, therefore, less inclined to work for a long time at one color problem. It is also true that whereas we frequently obtain admirable designs as to their forms, we seldom find in school an example of beautiful color made by children.

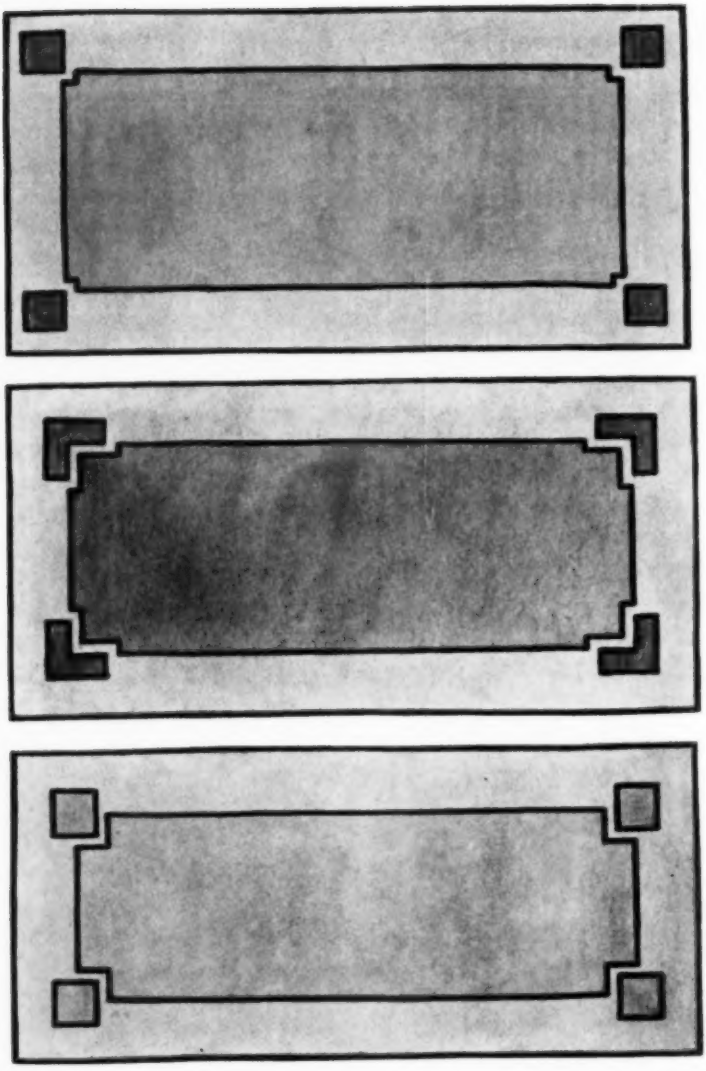
The second plan, like the first, is based obviously upon the very comprehensible idea that color harmony means color agreement. It consists in using tones of like (neighboring) hues. There must be the same order in the values, light, middle and dark, but the color may change slightly in hue. For example, supposing we are to try the rug; the largest area may be gray-green, the middle area may be gray-green but a little darker in value and a little bluer in hue, the small areas may then be the second step down the scale in value, and as much bluer in hue than the second hue, as the second was bluer than the first. Or, if we are making the couch, and start with a dark brown (orange and black), for the woodwork, the color for the seat and back may be middle value brown of yellower hue, while the cushions will be of lightest value and a second orderly step toward yellow.

The picture is a problem similar in kind. The aim is to

surround the picture with a frame entirely in agreement with the picture itself. A light picture is most agreeably seen in a frame light in value; a dark picture demands a frame low in value. Harmony is agreement, not contrast. Having painted the picture, the larger area of the frame is next painted with a color of a value and a hue which seems most like the average value and hue in the picture. If it comes out too light, we have reserved the narrow band between it and the picture as a means for correction, — we may make this band darker, thus balancing in effect the frame as a whole against the picture as a whole. If the wide area of the frame when first painted appears too dark, this narrow band should be made lighter. If it has not enough yellow in the green, the narrow band may be made yellower, etc.

The third plan for coloring recognizes the fact that the mind likes contrast, a change or rest from one line of thought. The world is full of contrasts, and we enjoy them: we have summer and winter, night and day, school and vacation, we are awake and then asleep. In many of life's contrasts, the greatest relief and pleasure comes from opposites. So it is with color. Each color has its opposite, which is the color most unlike it; for example, in our eight-color paint box, red and blue-green, orange and green-blue, yellow and violet-blue, green and violet-red, blue and orange-yellow, violet and green-yellow. As we know, any two opposites mixed together produce gray, but this is important to us now only as a test to find the color opposite (complementary to) any given color.

Suppose we decide to paint the couch woodwork, seat and back, and cushions green, reserving one cushion uncolored. Any related values and hues as above described will do. We desire also to relieve the eye from the monotony of green by adding a little of the color, a violet red, which most com-



pletely will change the color sensation. It is well known that, as a color, red challenges the eye, attracts it more forcibly than does green. Hence a little red, one cushion, will balance a lot of green. It depends, of course, in large measure how pure the red is. We shall be working along sane lines if we begin by making it agree in values and grayness (intensity) with one of our greens. Again, harmony is agreement; let us make the red agree with the green in value and intensity, tho it cannot in hue. But after it is done we may discover that it does not "feel" right. Unfortunately there are no absolute rules for producing beautiful color, any more than there are for producing beautiful music. At the last, it rests with us. Are all these colors in sympathy, has the combination unity? Is there one which is too strong or too weak in value, hue, or intensity to combine beautifully with the others? The chances are ten to one that some part will have to be changed. There can be no education of the color sense without thoughtful work, whatever program of color teaching may be employed. The love of color must be developed in an individual by his own efforts, it cannot be pumped in from the outside. If the mind is a blank and the soul is sightless, how can one enjoy color?

It is rather interesting to note that in a class of forty, there may be five who produce commendable color combinations at first, and that the others in the class will generally agree upon these as the best results. Class criticisms as to excellent and poor results, with reasons so far as they may be given, are highly valuable educationally.

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COLOR HARMONY*

COLOR instructors and painters at large are prone to speak of all color combinations as being either harmonious or inharmonious; of course the former being recommended and the latter condemned. It is because of a misunderstanding of what this classification may mean, what its scope, and limitations may be that has caused the theorist to lose caste in the eyes of the practical color worker.

When the color theorist has presented the practical painter with a color system, prescribing set formulas to be followed in determining his color harmonies, the painter has soon rebelled and found good reason for so doing, in that he was able to violate these rules and still produce works of unquestioned merit.

All forms of color combination can be understood, and these apparent inconsistencies will be of the past when the instructor comes to a full realization of the fact that harmony is but a solution of one third of the color problem. It must first be thoroly understood that a major portion of all successful color work cannot be explained by direct conformity to any logical laws of harmony and that all successful compositions in color and music depend upon one, two or all of three considerations.

* In explanation of this article it is necessary to state that it was the intention of the writer, after having published the opthalmic scale, to propose the musical analogy as a solution of the color problem, to be set forth in a series of articles, each step taken up in its logical order. The musical analogy is not a new or original idea with the writer, but without the opthalmic scale (which did originate with the writer) all this line of study has been of but little value.

As preliminary arguments, proofs, etc., would consume time that could much better be put to other purposes, this article is offered out of its natural order, so that those of an investigating turn of mind may, at once, have something tangible to work with.

First — In which the attention is attracted by two or more notes simultaneously.

Second — In which two or more notes attract the attention successively.

Third — In which two or more notes divide the attention.

These are known as the three main constituents of music. The first, simultaneous, is called harmony. The second, successive, is called melody, while the third is known as counterpoint.

Harmony depends upon gradation or suppression. It may be easily understood and employed by all, tho it limits originality as it is governed by more or less definite mathematical laws.

Melody is logical and somewhat dependent on the first consideration, tho allowing of greater freedom; here the individual may shine.

Counterpoint: — Thru transition the content is found in the integral, the parts of which may not conform to either of the two foregoing considerations, even while being a concession to them, for thru its subtilities the two former may not be easily discovered and in a form of suspended animation nothing may be definitely resolved, — it is the realm of genius.

This article deals with harmony, which for convenience is placed in order as the first consideration and, indeed, until it is definitely understood, the other two can hardly be intelligently approached.

Harmony in color, music, politics, religion, and in fact in everything that the human mind can conceive, depends upon the working together of various elements that do not conflict with each other in any material way. Inequality of these

factors calls for a suppression of certain of them and a dominance of others, following out a very definite plan, concerning the quantity of the suppressed elements that may be employed without conflicting with the quality of the dominant factors.

The instructor can bring out a clear understanding of harmony by falling back on many illustrations, as, for example, the priority obtaining in a military organization, the government of state, or perhaps better still, in the forming of a class society or club where order depends upon subordination; there can be but one first officer acting as chairman or president, while there may be two vice-presidents, and if a volume of work is to be handled each may have a secretary and, as minor offices are created, committees, subcommittees, etc., the number of officers may be increased in a direct ratio to the unimportance of the office to be filled, down to the main body of the members who hold no office, and as each officer is also a member of this main body, the unity of the whole may be pointed out, as well as the harmony which depends upon each performing his duty in coöperation with all.

The opthalmic scale offered in the April issue of The School Arts Book of this year is recognized by those having some knowledge of music to be identical in its rates with the musical scale, and in pursuing the study along the lines of analogy we are led to seek an understanding of this new scale and the relationship its notes bear to each other, from that which has been so well established by the musician.

There is no necessity for enlarging on the futility of the color student taking exception to the musical terms. Let him accept them graciously, not because they are musical but because they are apt.

The first note of the scale is called tonic, and the scale

THE COLOR PROBLEM

IS INVOLVED BY THREE CONCEPTS OF THE

COLOR SCALE

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HARMONIC ORDER
VERTICAL SCALE

Color of first intensity ☐ (Saturated) Dominant

" second " ☐ (First Suppression) Subdominant

" third " ☐ (Second Suppression) Mediant and Submediant

" fourth " ☐ (Third Suppression) Sub and Supertonic

" fifth " ☐ (Fourth Suppression) Tonic

☐ Purple Tonic

☐ Violet Subtonic

☐ Blue Submediant

☐ Green Dominant

☐ Yellow Subdominant

☐ Orange Mediant

☐ Red Supertonic

☐ Purple Tonic

FORCE (Values. Relative Light and Dark. Chiaroscuro)
CONCEIVED IN THE THIRD DIMENSION

MELODIC ORDER
DIAGONAL SCALE

Tonic Supertonic Mediant Subdominant Dominant Submediant Subtonic Tonic

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Purple Red Orange Yellow Green Blue Violet Purple

ORDER OF COUNTERPOINTS·HORIZONTAL SCALE

is called diatonic, meaning between the tonics. The tonic is the builder, it is the note from which the scale is formed. The eighth note when considered in its harmonic order is identical with the first, as well as with the generator which is found two octaves below the first. (The change in intensity of this note as it is introduced into the melody must be treated under the subject of succession.)

The tonic must be conceived, not only at either extremity of the scale, but also under and running thru the whole scale. It is the point of rest; motion is found thru the rest of the scale, the extreme of which is found in the fifth note.*

The fifth note is called the dominant and is conceived as being the most removed from the tonic; it is the controlling tone in harmony.

The third note of the scale is called the mediant, it is of middle or half† intensity as it falls half way between the tonic and dominant.

The subdominant, as its name would imply, comes just under the dominant; it is the fourth note of the scale.

The second note of the scale is called supertonic, coming as it does half way between the mediant and the tonic.

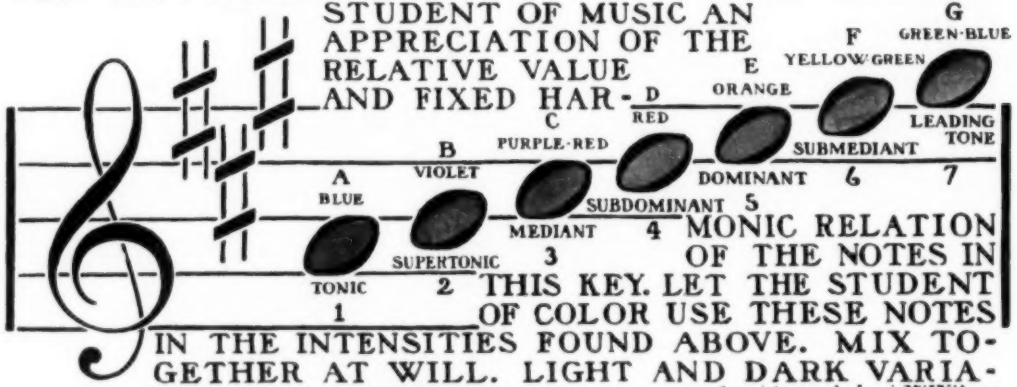
The sixth note, the submediant, falls as far below the tonic (eighth note) as the mediant comes above the tonic (first note), in its harmonic order it must be considered as an undertone.

* As the musical scale cannot easily be conceived in its harmonic form, the student is referred to the origin of this scale which is attributed to Pythagoras and was formed by combining two conjunct tetrachords, the first note of the one corresponding to the last note of the other, and, as these or rather this note is taken as the point of repose, it will readily be seen that the movement of the first tetrachord is upward while the second is downward, in each case the movement is from the tonic toward the dominant.

† In this instance intensity is based on chord formation in which the lower notes are the most submerged.

COLOR & MUSIC

THE KEY OF A-MAJOR. THIS CHART WILL GIVE THE STUDENT OF MUSIC AN APPRECIATION OF THE RELATIVE VALUE AND FIXED HARMONIC RELATION OF THE NOTES IN THIS KEY. LET THE STUDENT OF COLOR USE THESE NOTES IN THE INTENSITIES FOUND ABOVE. MIX TOGETHER AT WILL. LIGHT AND DARK VARIATIONS AD LIBITUM.



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To the diminished seventh note the term subtonic is usually restricted, but this harmonic order calls for the seventh as well as the diminished seventh, and in fact all intervals between the fifth and the eighth notes as subtonic. The seventh note is called the leading tone, but this term has nothing to do with the present consideration in its harmonic suppression, where it may be regarded of relatively the same significance as the supertonic note.

One might search a lifetime and not find as expressive a set of color terms as these already made for us; the desired flexibility is found in them, for while they pertain more specifically to the harmonic order, they lend themselves readily to the other two considerations.

The suppression or degrading of color was treated in the February number of The School Arts Book of this year.

Before any key is formed, exercises in the suppression of each color should be undertaken, in which each color is first submerged to a point just short of losing its identity; then a vertical scale may be arranged with the pigment standing for the greatest intensity, above, and this same color submerged as the lowest note of the scale with three intermediate steps coming between as suggested in the diagram. The middle note of the third intensity is composed of relatively one-half of the saturated (first intensity) and one-half of the submerged (fifth intensity) of the scale, while the other two degrees are intermediates compounded from approximately one-half of the two intensities of the scale degrees between which they lie. This scale must be graded by eye. There is no other direction that can be given.

To the degrees of this scale, when it is completed, we will assign the terms which will designate the application of each step to its proper place in some key. We will find, in the un-

suppressed color above, the dominant; in the second degree of the scale, the subdominant, the color of the second intensity and the first suppression; in continuing to read down the scale, we find in the third degree the mediant and submediant of the third intensity and the second suppression, and so on the subtonic and the supertonic will be fourth degree of the fourth intensity and the third suppression. The tonic is the submerged color, the fifth degree, fifth intensity and fourth suppression.

Then a key may be formed, for example the key of A may be taken, and each note-character may be colored to conform to the degree of suppression indicated by its position in the scale: as in the first note we have blue in the tonic, a color of the fifth intensity, while in the second note of the scale the color is violet, supertonic, fourth intensity, etc. The A scale is the first one chosen for illustration because it was the Greek standard as well as because of its general character, it being one of the most cheerful of all of the keys; it is called the golden key, it is warm and sunny, chosen by musicians for spring songs and all that sort of thing. Mendelssohn's Spring Song is written in this key. The painter finds his successful work often will have been pitched in this key, when he painted warm and sunny compositions, which are not necessarily restricted to the springtime.

The emotional character of each musical key is paralleled in the corresponding color-key. As in working with the musical key, passing notes may be introduced without changing the character of the key, so, too, passing notes may be employed in work with the color-key, if great discretion is observed, which means small proportions or degraded intensities of these foreign notes.

In exhausting the possibilities of a key a complete selection

of the various notes must be employed. A choice of but two or three, or large quantities of but two or three to the exclusion of the remainder, or with but insignificant quantities of the remaining notes, will always produce ambiguous results.

We have often been told that to achieve harmony in color arrangements we should employ but one "strongest" color. A single glance at the harmonic order of our scale will reveal the true basis for harmonious results, for we find here not only our one "strongest" color but also the relative "strength" of the remaining notes of the key.

The "strongest" colors may be used also in lesser degrees (as a general rule reduce "strength" by admixtures of the tonic), but the harmonious whole would be upset if the degraded colors are raised in "strength" (which simply means greater intensity).

When flowers are presented in an harmonious setting the arrangement invariably falls into some key. The nasturtium falls naturally into this A key, tho in the harmonic order it may be treated in design only, the realistic calls for the other two considerations.

While the same basis for deductions is found in both color and music, it is not necessary for the colorist to know anything of music any more than it is for the musician to understand color.

The key to the solution of the color problem, however, is found in the following:

Harmony is a vertical concept.

Counterpoint is conceived on the horizontal.

Melodies occur on the diagonals, while force, that is light and dark (chiaroscuro), is conceived in the third dimension.

A logical and broad interpretation of the above is found

to be a sure guide, concise, and at the same time free from constraint.

The three positions or orders of the scale are, of course, in a complete color arrangement interwoven, and it is this interweaving with the accompanying force, ad libitum, that makes specific classification of color combinations (the web) unsatisfactory.

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A WORD ABOUT COLOR

"COLOR formulas," "color theories," "color scales" are all very interesting in their way, and they assist us materially in making "color harmonies" that are strictly according to law, and in fitting all our results into the mold at present recommended by the normal schools of art. Individuality of outlook and a personal mode of seeing are, unfortunately, a bit abnormal, and are not often developed in the "normal" school methods, which rather tend to the somewhat monotonous results achieved by the brick-yard, as all our school work is too apt to do. Real seeing will never come from theory mongering, and all our color talk may leave us blind, in the end, to the crude and downright facts. Theory should follow, and be tested by, experience; and it seems to me we are in great danger, in the study of color, of allowing it to usurp the place of experience, and of treating our vision as the robbers in the old tale did their captives — putting them on the iron bed of a theory, and cutting them off if too long, stretching them out if too short.

Now, I do not venture to think I have arrived at the ultimate solution of anything — far from it. If ever I teach two successive years, or even two successive hours, just alike, I shall look in alarm for the spot where I am fossilizing. Still, since I am objecting to something we do commonly practise, I ought at least to have some practical substitute to offer. So, if I may repeat a dialog, perhaps it will serve to direct others to some happier land than I myself have yet reached.

I began teaching color this time with a hideous little vase, put out by some misguided "art pottery" firm. The vase was lemon-yellow — "standard" yellow, I believe it is called — highly glazed, and shaped like an apoplectic gourd. It had not one good quality; but it had a color that was unmistakable, blatant, uncompromising.

I — (holding it up) What color is this?

Class — (unanimously, and with perfect conviction) Yellow.

I — Is the side turned from the window the same color as the side toward the window?

Class — N-n-o.

I — What color is the shade, then?

Class — (with less conviction) Brown?

That will do to discuss later. I let it pass, and go on.

I — What is the color of this? (pointing to the high light) Is it yellow?

Class — No, it is white.

I — Is it? You see that it reflects the window, and all the outside scene ; the sky above, the brick houses, the tree — what color is it, really?

This causes some study. Finally they decide it is pale blue, pink, and green — very faint in color — almost white.

I — Well, with a brown shadow, and a pale blue, pink, and green high light, how much real yellow have you on your yellow vase?

Class — (With some laughter and confusion) Well — a little — not much — just about a third of it — a circle around the high light — where there isn't any light nor any shadow.

Now I pick up a half dozen bits of paper. They are also violent in color. They need to be, for my purpose. I put a blue background behind my yellow vase.

I — What color is the shadow now?

Class — Green — very green.

I — Has the light changed?

Class — Yes, a little ; just at the edge nearest the background it gets a green tinge reflected.

I — Shadow green, high light blue, pink, and green, and edge of light green; is any of it still pure yellow?

Now they do study ! Finally they make up their minds.

Class — Yes, there is one little spot pure yellow yet. It is just between the high light and the shadow. The other part of the light gets a reflection either from the background or from the paper beneath, the shadow isn't yellow at all, and the high light isn't yellow at all. But that one little spot is still pure yellow.

We try the red paper — the green paper — the brown paper — the gray; we try them on blue, gray, and red vases, as well as the yellow ; and by the end of that time we are convinced of one or two things.

1st. The light on an object indoors is cool, reflecting the blue of the sky. On gray days it is warmer than on sunny days, for on gray days the sky, which gives most of the light in the room, is not so cool a color as on blue days.

2d. The shadow color is largely determined by the color of the background, the table, and other surrounding objects. Unless the background is decidedly blue, the shadow is apt to be warmer than the light, indoors.

3d. The colors of the background and of the light reflect more or less in every part of the study, except that —

4th. One spot on an object is usually, but not always, the pure local color. That is the spot farthest from the background and from the light — the half tone.

5th. An unglazed or rough surface does not reflect the surrounding colors as much as a glazed surface ; so that a bit of earthenware, for instance, is apt to show the local color more plainly than a glazed vase; but even in the earthenware the colors are somewhat modified by the reflections, and

the roughness of the surface makes many tiny points of shadow that tone the color toward gray.

6th. The way nature secures harmony, even in an unpromising little shiny lemon-colored vase, is by forcing that vase to reflect blue and white light from the sky, and other tones from all the things about it, until practically every inch of its surface is repainted by the light, and has in it, not pure yellow, but yellow, toned by red and blue.

Then the class sits back and draws a deep breath, and says, in the words of one member,

"Well! I just think that's the most awfully wonderful thing I ever did see!"

Later on, we put the same vase in a dark box, with a lighted candle, and note that now the light side is orange colored, the high light, a tiny reflection of the candle flame, is brighter orange, the background, a brown-gray paper, is orange a tone less bright than the light side of the vase, while the shadow on the paper is deep, cool purple, and the shade on the vase is cool green; and across both purple and green the orange light plays.

Later we will study a tree out-of-doors, and observe that it is *not* green. We will match it with color spottings for light and shadow; and lo, the top is gilded with the sun, the middle reflects the blue sky, and the under side glows almost rose-colored from the sunlight reflected from the red clay beneath.

We haven't talked much about theoretical color harmonies, but we have found out how God makes His own; and I think we have a sense of the wonder of every-day things, and an awakening of awe and delight, because, for the minute, we really see the miracle beneath the commonplace. I wonder if we could ever get it from rules, and scales, and abstract color argument? These have all their place, but it is farther on;

and even then, they are better corked up well, like the Genie of the fisherman. Unbottled, there is danger of their expanded forms filling our whole sky, and we shall soon hear their awful tones threatening to cast us into the sea of fearful, deep, and unstable theories, far from the dear wholesome and safe land of solid facts.

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Kansas City, Missouri

ENLARGEMENTS FROM ARCHITECTURAL DESIGN

THE accompanying illustrations are reproductions of drawings made by a class of Junior boys in the Boardman Manual Training High School, the Technical Department of the New Haven High School, New Haven, Conn. These drawings were enlargements from photographs, book illustrations and postal cards, or more strictly speaking, of sections of these.

As members of the Sophomore Class, the pupils had made a careful study of perspective. The theory of perspective had been followed by much experiment in pencil sketching from desks, tables, chairs, etc., singly and as parts of interiors. These sketches were later transferred to bond paper and finished with pen and ink. The work included simple treatment in light and shade. With this knowledge as a background, and some preliminary instruction in the balance of areas, and of light and dark, the enlargements began with subjects chosen from postal cards. As design entered into the project as well as proportion, each student was furnished with a pair of "finders" and a postal card containing some architectural subject. These finders were made of two right-angled pieces of paper, Figure 1, and were laid upon the card so as to form a rectangle B. This rectangle was enlarged or decreased until the space proportions as well as the forms to be enlarged were properly adjusted. When this had been accomplished, the "finders" were pasted together and became a frame for the picture that was to be enlarged. This frame was placed upon the card and pinned firmly to it. As the perspective of buildings, especially on the postal cards, was often found to be exaggerated, it became necessary to locate the level of the eye upon the card, and to place, proportionally, a similar line upon the enlargement before the work

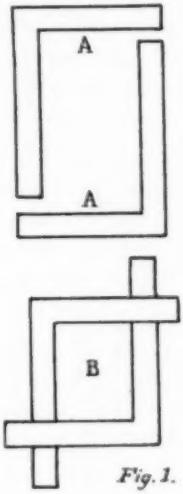


Fig. 1.

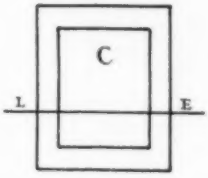
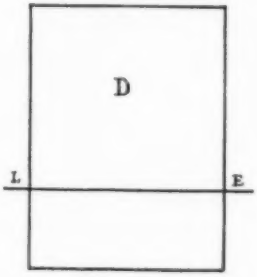


Fig. 2.



of enlarging began. This work of enlargement was never a matter of inches or of parts of inches, or of working to any scale, but was kept always as an exercise in proportion and as a study of related lengths and widths. The frame C, Figure 2, was laid upon the card and the eye level, L E was located and drawn upon the frame. The rectangle D was then drawn so that its width was to its vertical height, as the width of the frame was to its vertical height. The vertical height of the frame was used as the unit of measure for all other proportions. An eye level was drawn on the rectangle D so as to cut the vertical sides into proportional parts similar to those made by the eye level drawn upon the card through the frame. The direction of the base lines of the building, to be enlarged, those to right and left, were changed so as to correct exaggerated perspective, and were extended toward the eye level, and became the guides

for all lines which were by construction parallel to them. Here it was found that all previous knowledge of perspective was called into play, as in many cases the perspective lines required reconstruction thruout the entire study. The enlargement with perspective corrections was made with pencil on white drawing paper, and then transferred to the paper chosen for the finished drawing — charcoal paper or bond paper for pen and ink.

Plate I is reproduced from a drawing finished on charcoal paper. The pencil enlargement had been transferred by means of impression paper and a hard pencil to charcoal paper, and the outlines had been traced with ink, that they might remain distinct when the light and dark surfaces had been developed with charcoal. Plate II shows the original photograph from which this subject was selected and enlarged. The illustration in

color, Plate III, "F" is from another drawing which was finished in charcoal and afterwards colored with flat washes of water color. Of course the charcoal drawing had been thoroly "fixed." This class had had very little color study. The color

Plate II. The window of Charles IX, from the Palace of the Louvre, Paris

chosen was in answer to the question as to the time of day as day or evening, and as to the building material, as stone or brick or wood. A blue sky, or an evening sky controlled the color scheme, or a gray stone building or one of red brick, would sometimes suggest the choice of sky.

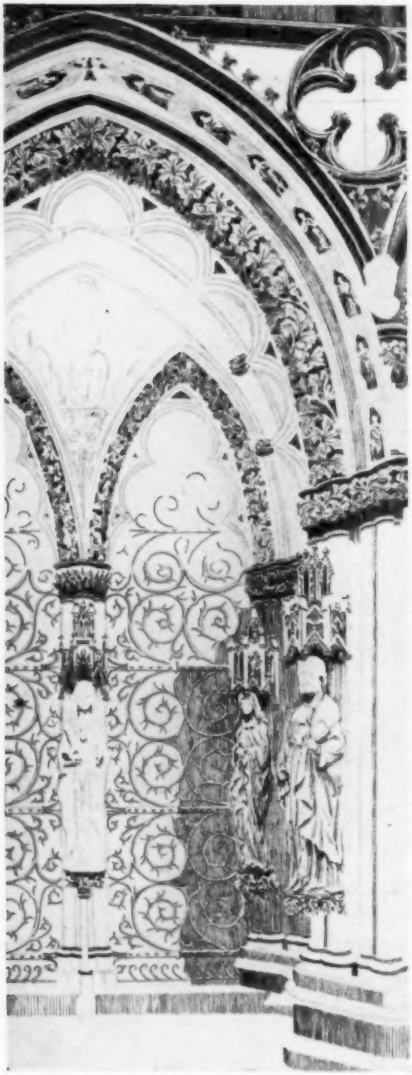


Plate V shows a partly finished enlargement drawn with pen and ink from a section of the photograph reproduced as Plate VI. The remaining illustrations, Plate VII, were from sections of postal cards. They had been transferred to charcoal paper, toned and finished with water-color wash.

EMMA R. WRIGHT
Art Department, Boardman School
New Haven, Connecticut

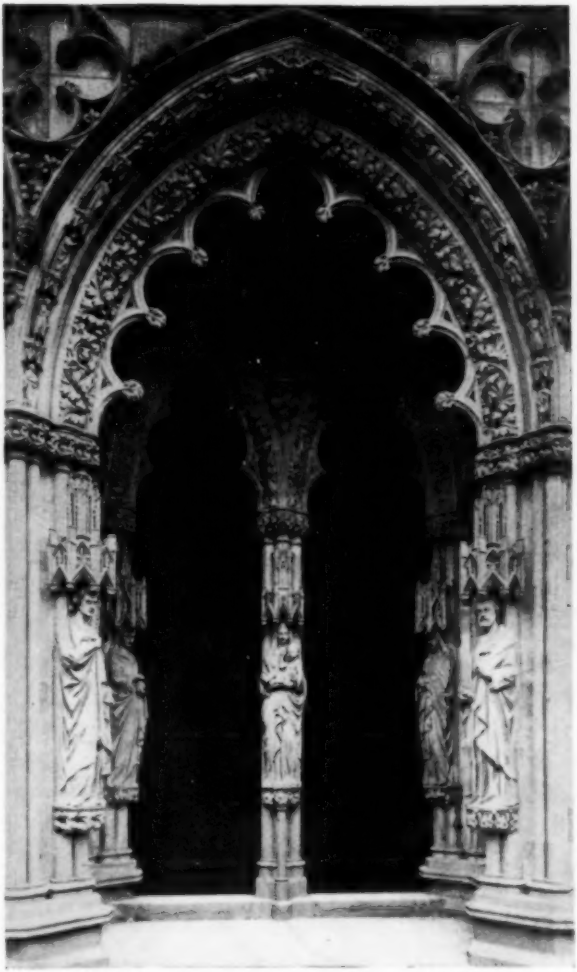
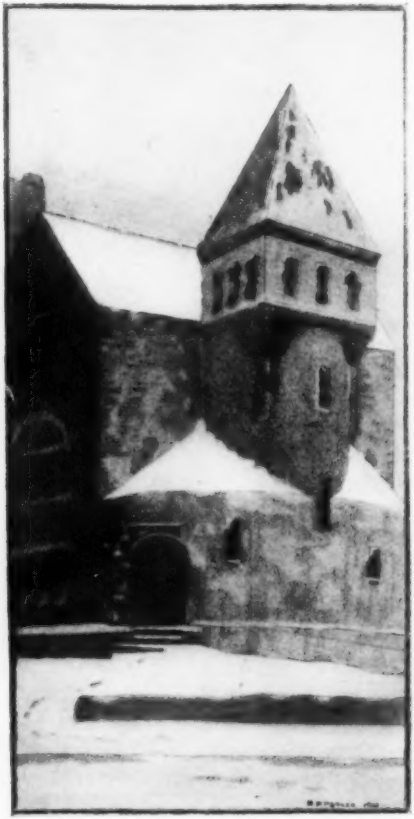


Plate VI. The west door of Lichfield Cathedral, England



MY WORK BOOK

WE say, "Drawing is a universal language." Has it proven to be, in your schools, so far? We say, "It is a means of expression." Is it, in your actual experience? To hold our work up to the light for criticism and to test our goods occasionally, is a sign of common sense. Do the colors hold fast? How many of our students really make use, after they get away, of the drawing instruction they receive in school? Isn't that the real test of its worth — its practical use? If drawing had been all that was claimed for it, by this time the generation that was taught drawing twenty years ago would require it in every school in the land, and aid us in gaining more time for its application.

Drawing has not been the complete success we wish it to be, for two reasons: first, it has too often been considered an end in itself; second, outlined exercises have claimed all the teacher's attention to the exclusion of practical applications. Drawing in at least the first six or seven grades is only a means to an end. It is merely a line of work supplementing other school studies, but, undoubtedly, a very important one.

A delegate at a convention a year ago said: "During the past fifteen years I have been director of an art school and, let me tell you frankly, I would rather have an untrained child enter that school than one who has received the present average training of the public schools.* If the speaker were expecting embryo artists as the result of training in our public schools, then he should be set right in regard to the aim of our efforts in drawing. But if he recognizes the trend of our efforts and finds that children are lacking in ability to express themselves intelligently by means of drawing, then it is time for us to

* Remarks by Mr. Henry Read at the 1909 Convention of the American Federation of Arts, p. 58 in Convention Proceedings.

right-about-face and to set ourselves to do what we talk about, namely, to make drawing actually a means of expression used constantly in the child's life and work.

Manual training, construction, hand work, or whatever name we give to it, has likewise fallen far short of what we anticipated. I am referring to the work in the grades. Such work, now classed under the psychological term, motor training, has had its battle for existence, but it is here to stay. "The teacher needs it in teaching not one subject, but most subjects; the public demands it because it offers the most obvious means of beginning the training for vocational life." * It has passed thru many and varied stages, from useless exercises in cutting paper or wood, to the sewing of children's kimonos by boys in the fifth grade. All this may have had its pedagogical or psychological value, but not until we make things of practical value to the individual shall we begin to teach as we should.

Not until manual training becomes a practical demonstration for the value of drawing as well as the right kind of motor training will these two subjects become harmonious, and an asset in the child's life. Only manual training as applied design is quite worth while. The product must be of direct value in meeting the child's needs, physical, mental, and esthetic; otherwise the time might better be used for good writing and practical arithmetic.

Dissatisfaction with the results thus far secured in drawing and manual training, and sympathy with the grade teacher, lead me to make a few suggestions, under the heading, "My Work Book." I hope that the spirit in which they are written will justify any extreme of ideal they may present.

* The School and Industrial Life, by James E. Russell, Columbia University.

In My Work Book I shall try to suggest ways of weaving into one completed book each of the lines of work of the fifth grade, showing thru it all how both drawing and manual training may constantly aid in the making and perfecting of the book. I have chosen the book because it is symbolic of thought and learning, and is equally worth while for boys and girls. I call it the Work Book because between its covers will be found examples of all school work. And it is My Work Book because from beginning to end it is mine. It will be, when completed, a record of what I have learned during the year. Next year my book will be better, because I shall grow.

In planning the work I would confide in the children to the extent of telling them the year's "secret." A book is to be made by each one, therefore each book will be a little different ; but all will show the best possible examples of the different kinds of work. That means, of course, that as any lesson is given the idea that this piece of work may be good enough to go into "My Book" will stimulate each pupil to do his best. In the end each child will be his own judge ; for poor work in his book will never be allowed to pass, if he be allowed the final verdict.

The first subject to be considered will be Arithmetic. It will bring into immediate use Manual Training, English, Writing, Spelling, and Design.*

* I have planned to have the year's work done on loose leaves. The last two articles will take up the making and finishing of the book, Manual Training. Because the size of paper for the different subjects varies, it is quite out of the question to bind them in an orderly manner. My plan is to make a separate blank book or dummy and to have the work carefully pasted into it.

It is not my intention to specify in regard to the medium. My idea is to bind into book form the work as it would be done under each subject. Language work would be in ink, some nature work in pencil, some in water color, work of the drawing lesson in all three with crayon in addition. A study made in the drawing period with pencil on drawing paper will be used to illustrate history or some

CHAPTER I. — Arithmetic.

IVING first place to arithmetic in the development of My Work Book does not mean necessarily that this chapter must be completed before another is commenced nor does it mean that I would make this my first chapter if I were a fifth grade teacher. I have started with this subject because it gives an opportunity to figure on the completed book. I shall take up other subjects in a certain order for a similar reason, because it is more convenient in planning these articles.

The first step in planning My Work Book is to figure on its size, shape, cost, etc. Ideal conditions, which might easily be managed, would provide a "stock room" in charge of a division of the seventh or eighth grade children. The manager of the stock room, who might assume charge for a week at a time, would be called into the fifth grade and questioned concerning the supplies in his keeping. "What kinds of paper have you? How large are the sheets? What is the cost of each kind per sheet? etc." With this information the class can begin to plan the book.

It is necessary of course to consider the sizes of papers commonly in use in school work. Language work probably requires the largest size sheet, and that might determine the size of the book. Arithmetic papers assume a different shape and proportion because of the character of the work. Probably a proportion similar to that shown in Plates I and II will be

other subject which may be written in ink. I want the teacher to feel that the work will progress as it always has with this one exception,— that all subjects may work for the good of each, and that drawing plays a most important part in this harmonious relationship.

best for all purposes. The exact size will depend on how the pages may be cut to best advantage from the large sheets. There must be as little waste as possible, and if any, it should be used later in other work. I have decided upon a page 9¾ inches x 7⅞ inches as the best for my book. Fractions, linear measure and square measure have been involved thus far.

Having decided upon the size to be used and having found the number of pages which may be cut from a large sheet, the cost per page is then figured. The arithmetic lesson may require two of the small sheets a day ; a week's supply is worked out for a class of thirty. Each child now makes out an order slip for a week's supply of arithmetic paper for the class. This involves problems in addition, subtraction, multiplication, division, decimal fractions, common fractions, the making out of bill forms, and the rendering of accounts.

Until the children are ready to render accounts the teacher will of course arrange as she ordinarily does with those in charge of the stock room for all supplies.

As the work is progressing, accuracy and neatness must be insisted upon. The accompanying illustrations present sample sheets, and show that design is a constant factor. Pleasing arrangement, proper emphasis of important features, and good spacing must be ever in mind.

Plates I and II suggest ways of figuring out the first two problems. The word Arithmetic will be printed in a simple straight line letter at the top of the paper. Various arrangements for the spacing of the headings may be talked over and all good ones used. When lines seem necessary they should be ruled and stopped a half-inch inside the edge of the paper, that each page may have its proper margin. This gives unity to the page, and makes the child think.

Plate III illustrates two forms of slips to be presented to

-ARITHMETIC-

R·B·F DATE

PROBLEM- To find size of sheet needed for arithmetic and number contained in large sheet.

Size of large sheet	22×30
Width of small "	$5\frac{1}{2}$
Length " " "	$9\frac{3}{4}$

$5\frac{1}{2}$ is contained in 22 four times

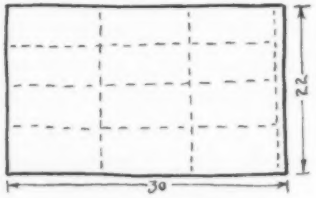
$9\frac{3}{4}$ - " - 30 three " $+\frac{3}{4}$ inches

$22 \div 5\frac{1}{2} = 22 \div \frac{11}{2} = \overset{2}{\cancel{22}} \times \frac{2}{11} = 4$

$30 \div 9\frac{3}{4} = \overset{10}{\cancel{30}} \times \frac{4}{\underset{13}{\cancel{39}}} = \frac{40}{13} = 3\frac{1}{13}$

$\frac{1}{13} \times 9\frac{3}{4} = \frac{1}{\cancel{13}} \times \frac{\cancel{39}^{3}}{4} = \frac{3}{4}$ inches waste

Number of pieces in short side of sheet	4
" " " " long " " "	3
Total number in large sheet	12



Size of small sheet is $5\frac{1}{2} \times 9\frac{3}{4}$ with a $\frac{3}{4}$ inch strip waste.

PLATE I

-ARITHMETIC-
DATE
Royal Bailey Farnum
PROBLEM- To find the number and cost of arithmetic paper necessary for one weeks work in a class of 30.
Cost of paper per ream (500 sheets) $2.50
" " one large sheet ½ a cent or .005
500/2.500
12 1/24 2400 1/2
0000
If there are 12 small sheets in one large one then would be as many large sheets needed as 12 is contained times in 30 or 3. As each pupil needs 2 sheets a day then 6 large sheets are required.
Number of school days per week 5
" " sheets per day 6
" " " " week 30
.005
30
.150
Total cost of paper per week $.15

PLATE II

PLATE III

the supply room manager. Every child will make out one of these slips, the best to be copied and one of them to be taken to the stock room. These should all be well spaced, readable at a glance, and on a uniform size of paper for convenience in filing. Such a form means much to the business man in the saving of time.

In schools where paper is not provided, the five cents with which each child purchases a block of paper at the corner store, will go much farther if it is turned into a common school treasury and the whole amount used in buying materials at wholesale. In this case there is an excellent opportunity for the writing of business letters to various paper houses for quotations of prices. Then the stock room, on a smaller scale, will be in charge of the children of the grade, and the work will be carried on as suggested above.

As the work progresses the idea that each day's lesson may be worthy of going into the Book should be kept constantly in mind. The laws of good Design, Order, Balance, Harmony, are essential to successful sheets. Let each child feel that he is always responsible for what he does, and that his correct solution of the problem in hand, the first time, is ideal, for it means less waste of good materials, and therefore really a saving in cost. It means dollars and cents saved in somebody's pocket.

ROYAL B. FARNUM
State Inspector of Drawing
Albany, New York

ANNOTATED LESSONS
OCTOBER

THE wealth of material afforded by Nature during the month of October, material especially helpful in the study of color, tends to prolong the time allowed for freehand drawing and to crowd somewhat the work in constructive design and structural drawing which culminates at Christmas. In deference to current practice, the lessons illustrated this month deal with the nature material.

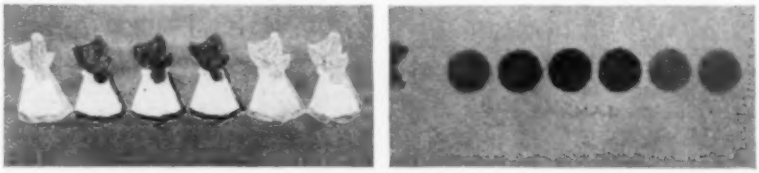


Plate I

THE SPECTRUM COLORS

Plate I. — These immensely popular little people, the sunbonnet babies, have appeared in honor of the spectrum in the first grade of the Broad Street School, name of town not given. The teacher presented hectographed outlines to the children. These were colored with crayons, carefully cut out, and pasted to form a procession in proper order. Dorothy Fenn Magowan, five years old, made the sheet reproduced in the plate.

The second illustration is a cover of a booklet of eight leaves. Following this cover, containing the six spectrum colors in order, were six leaves with illustration and appropriate text, the first on the red apple, the second on the flame-colored orange, the third on the yellow pear, the fourth on the green plum, the fifth on the blue plum, and the sixth on the purple grape. The remaining sheet formed the back cover. This attractive little volume was made by Muriel Alice Taylor, seven years old, Grade I, Broad Street School.

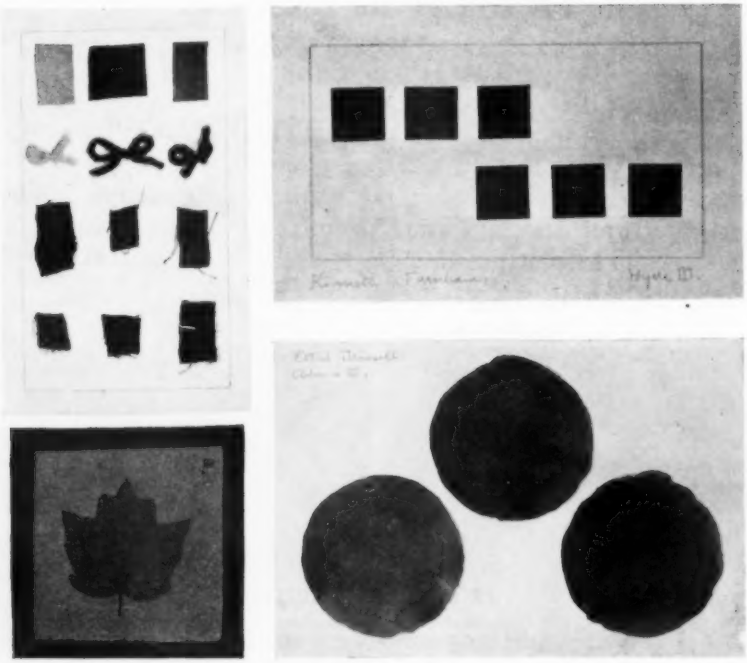


Plate II

THE STUDY OF COLOR FAMILIES

Plate II. — The first illustration on this plate shows material collected by a third grade pupil in Norwood, Mass. In the upper row, three pieces of colored paper show purple-red, red, and orange-red. Beneath these the same hues are shown in worsteds and pieces of cloth.

The next illustration is by Kenneth S. Farnham, Third Grade, Hyde School, Newton, Mass. This shows members of two of the color families, red-orange, orange, yellow-orange in the upper row, and orange-yellow, yellow, and green-yellow in the lower row. The squares are clipped from colored papers. The margin line in the original is yellow-orange, the color which seems to harmonize best with all the others.

The sheet below this, by Ethel Trussell of the Adams School, Newton, Mass., is the red family done in water-color. The original sheet is 6 x 9 with circles 3 inches in diameter.

The leaf is by Evelyn Newton, Grade IV, Westerly, R. I. The original is in water color. The pupil attempted to match the color of an autumn leaf, in this case a dull red. The drawing paper upon which this flat wash was placed was then cut into the shape of the leaf. Upon another piece of paper an orange-red tint was laid to serve as a background. Upon a third sheet a purple-red shade (very much dulled) was laid. From this sheet a frame of the right size to properly inclose the leaf was cut. The leaf and the frame were then pasted upon the background sheet. The original presents one of the most pleasing as well as one of the most educational result sheets ever produced, inspired by the autumn leaves.

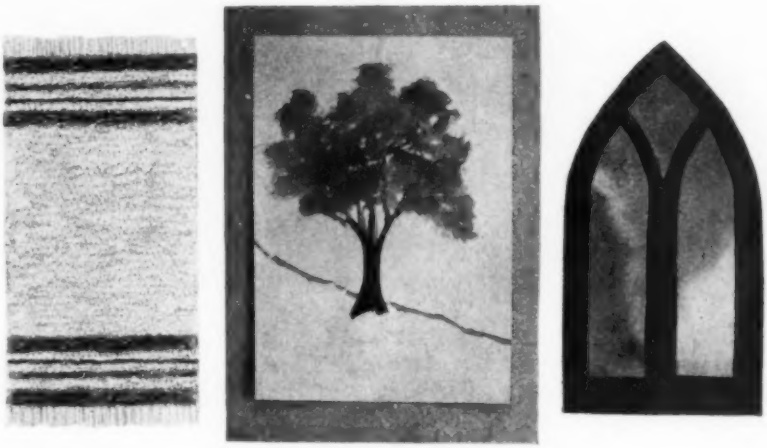


Plate III

BLENDED COLORING

Plate III. — The first illustration is a drawing of a rug by Gertrude Fenner, Guilford, Conn. It is drawn on rather rough paper with colored pencils. The result is astonishingly like a rug in texture, and the color

effect is unusually good owing to the intermingling of the red and the green crayon.

The trees furnish delightful subjects of study in the flooding together of hues of color. The central illustration on this plate comes from Sarah Clancey, in a Fifth Grade, Sioux City, Iowa. The study is commendable not only for the skill with which the hues of color have been blended to suggest the autumn foliage, but for the careful drawing in the trunk of the tree and for the good arrangement within the space.

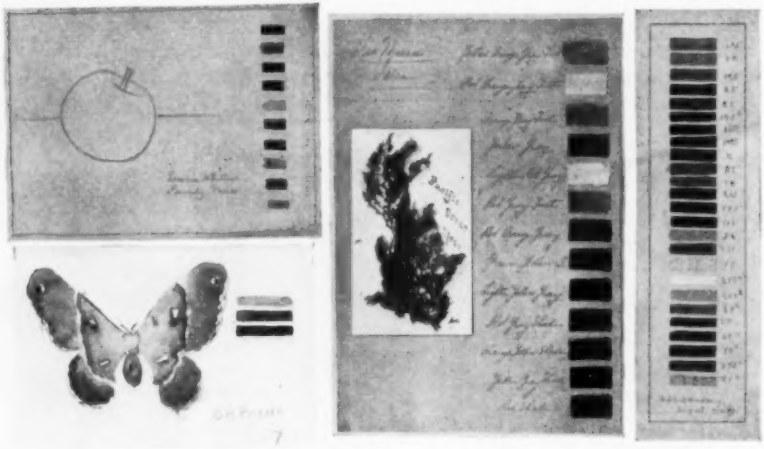


Plate IV

The third illustration represents a stained glass window. It came from a Fourth Grade pupil, Isabella Murry, aged ten, Oakland, Cal. From a sheet of dark green paper the form of the gothic window frame was cut. This frame was moved about upon a sheet of drawing paper where the standard colors had been flooded together haphazard. When a pleasing spot of graded color appeared within one of the openings of the window, the area was traced with a lead pencil. When all the shapes had been found in this way, they were cut out in such a way that they could be pasted into position in the window.

COLOR ANALYSES

Plate IV. — To assist the eye in its perception of color, perhaps there is no more useful device than a Milton Bradley sample book of Educational Colored Papers (indeed, they are well named). The apple sheet in this plate contains a drawing by Leonie Whittier, of Beverly, Mass., and a series of oblongs clipped from the sample book, showing the dif-

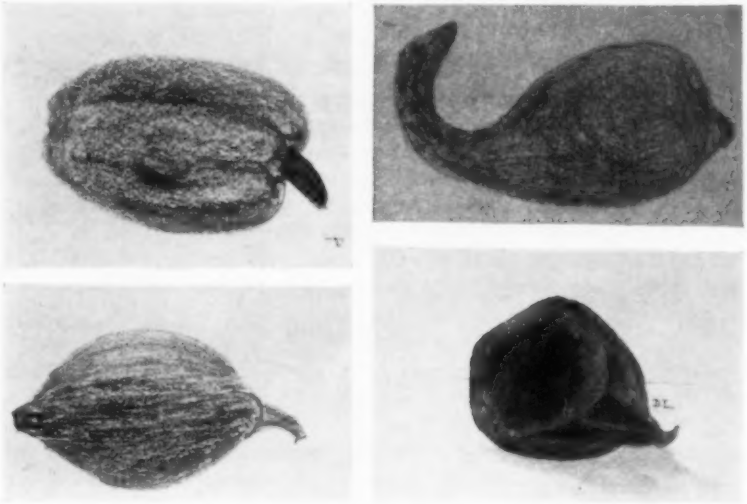


Plate V

ferent hues of color presented by the apple entire. The sheet below this is a drawing of the polyphemus moth, in water-color, by G. H. Payne, of a Seventh Grade somewhere. By the side of this is the scale of the three principal colors of the moth. The central sheet was made by a pupil in the State Normal School, Salem, Mass., several years ago. Upon a card, sea mosses were mounted. A careful study of their colors was made, sample book in hand, and the scale at the right arranged from clippings matching the original colors as nearly as possible. The matching of these colors and their arrangement in spectrum order is an exercise demanding careful discrimination.

The remaining illustration at the right shows a scale of color based on a stalk of highbush blackberry, as it appeared in winter. This study was made by Prof. Walter Sargent of Chicago University. In such exercises the pupil's entire attention may be given to the matching of the colors. The number of hues which any common object presents is astonishing. If pupils working in water-color produce results which are monotonous and uninteresting in color, an exercise or two of this sort with colored papers will open their eyes and enrich their later attempts in water-color.

AUTUMN VEGETABLES

Plate V. — Pumpkins and squashes are good objects for study in schools owing to their large size and the handsome colors they present. The first drawing in this plate is a pumpkin by Alfred Wall, aged ten, Augusta, Me. The second, a crook-necked squash, is by Ruth Stacy, aged seven, Williamstown, Mass. The third, a winter squash, is by Carleton Haskell, aged seven, Augusta, Me. These three drawings are in colored pencil. The fourth drawing, the cut squash, very rich in color in the original, is by Donald Leigh, aged twelve, Augusta, Me.

FALL FRUITS

Plate VI. — The Indian corn is a water-color drawing by Louisa Pender of Amesbury, Mass. In the original a delicate yellow background suggests the mellow sunlight of autumn. The ear of corn with its husks continue the color scale from orange-yellow into yellow-orange with touches of orange shade. To complete the decorative effect the object is outlined in a dull violet-red, the same shade being used for the inclosing form. The effect of this color combination is surprisingly good.

The sumach is a careful study of natural coloring by Nancy Currier, aged thirteen, of the Whittier School, town not given. It is to be commended not only as a piece of color but for its good arrangement within the space and for the very close observation of nature which the drawing reveals. Notice especially the anatomy of leaf and stem.

The apple is a thoughtful study from nature, in pencil, by Mary Owens, Eight Grade, Jefferson School, Everett, Washington. In this drawing the direction of stroke used in interpreting the various forms is especially commendable.

The fourth drawing on this plate, a spray of bitter-sweet, studied in three values, by Cora Dutton, Eighth Grade, Sioux City, Iowa, is praise-

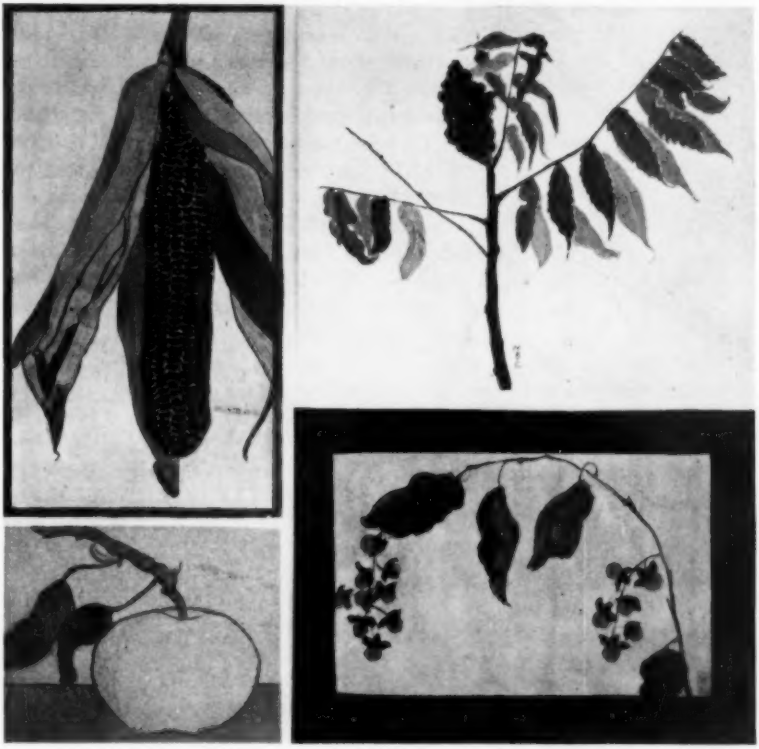


Plate VI

worthy for many reasons. The ground upon which it appears is ordinary drawing paper toned with a wash of diluted ink. The mount is a piece of drawing paper toned with a wash of ink. The spray itself is graceful, the drawing both of leaves and of fruit is carefully studied, and the handling is very direct. In the original the different values are pleasantly related to one another. A good effect has been produced by simple means, namely, ordinary manila drawing paper, ordinary writing fluid, and extraordinary thoughtfulness.

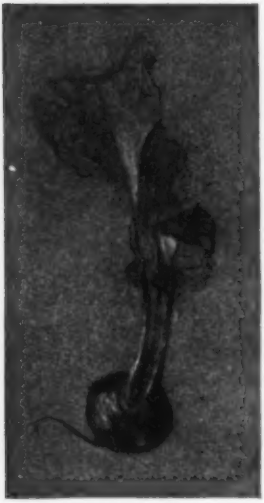


Plate VII

Plate VII.— The first drawing is a study in pencil from milkweed pods, by Isabel Fabey, Seventh Grade, Methuen, Mass. Isabel has chosen a position for the specimen which emphasizes its grace of line. The drawing reveals careful observation and no little skill of hand.

The drawing from the beet is a study in charcoal by Arnold Page, twelve years old, Augusta, Me. This drawing received a second prize in the contest for October, 1909. It is notable for the skilful rendering of foreshortening in the beet and in the leaves as well as for grace of composition.

DECORATIVE ARRANGEMENT

Plate VIII.— This drawing of grapes by Ella Thorpe, Grade VIII, Easthampton, Mass., received first prize in the October contest last year. The prize was awarded to this drawing for five reasons: First, careful study of the natural specimen and thoughtfulness in drawing; second, pleasing arrangement within the space; third, a beautiful color scheme; fourth, a mount of the right shape, size, and color; fifth, an effect produced by simple means. The whole sheet, including the mount, was produced from ordinary drawing paper with lead pencil and water color only.

Plate IX.— The first illustration is a decorative arrangement from the goldenrod by May Franklin, aged twelve, Everett, Washington. The original is in ink. The lines of growth and the disposition of masses and areas within the frame are unusually good for a seventh grade pupil.

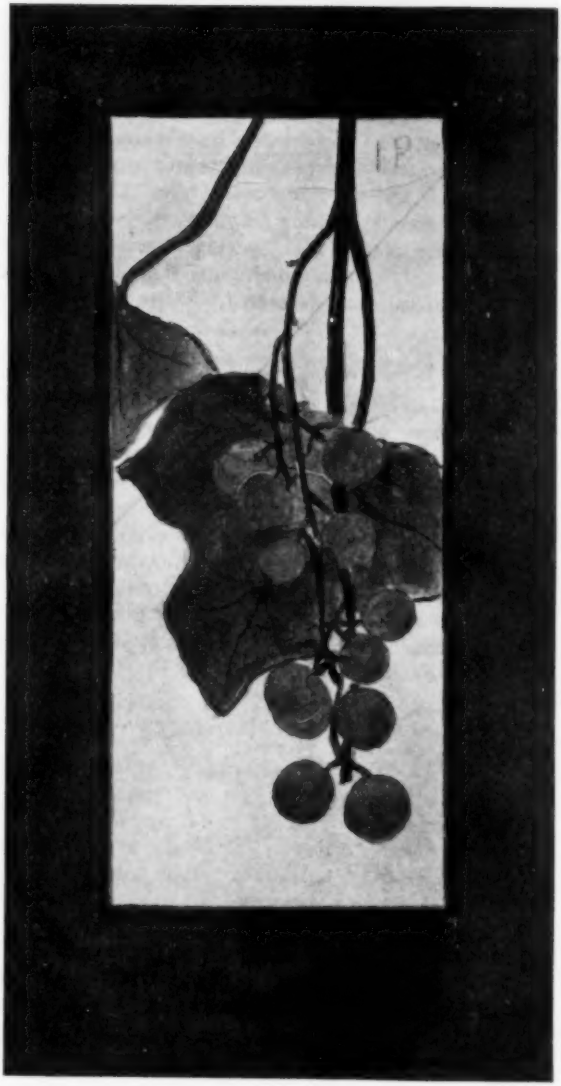


Plate VIII

Plate IX

The second drawing is by Grace Schilke, Seventh Grade, Swissvale, Pa. The original is drawn in water-color and Chinese white on a colored paper. The various attractions are well distributed within the frame.

The third is a study from the salvia in four tones of gray by Marion O'Connor, twelve years of age, Lawrence, Mass. This drawing received a third prize in the October contest, 1909. The original was made with charcoal gray on ordinary white drawing paper.

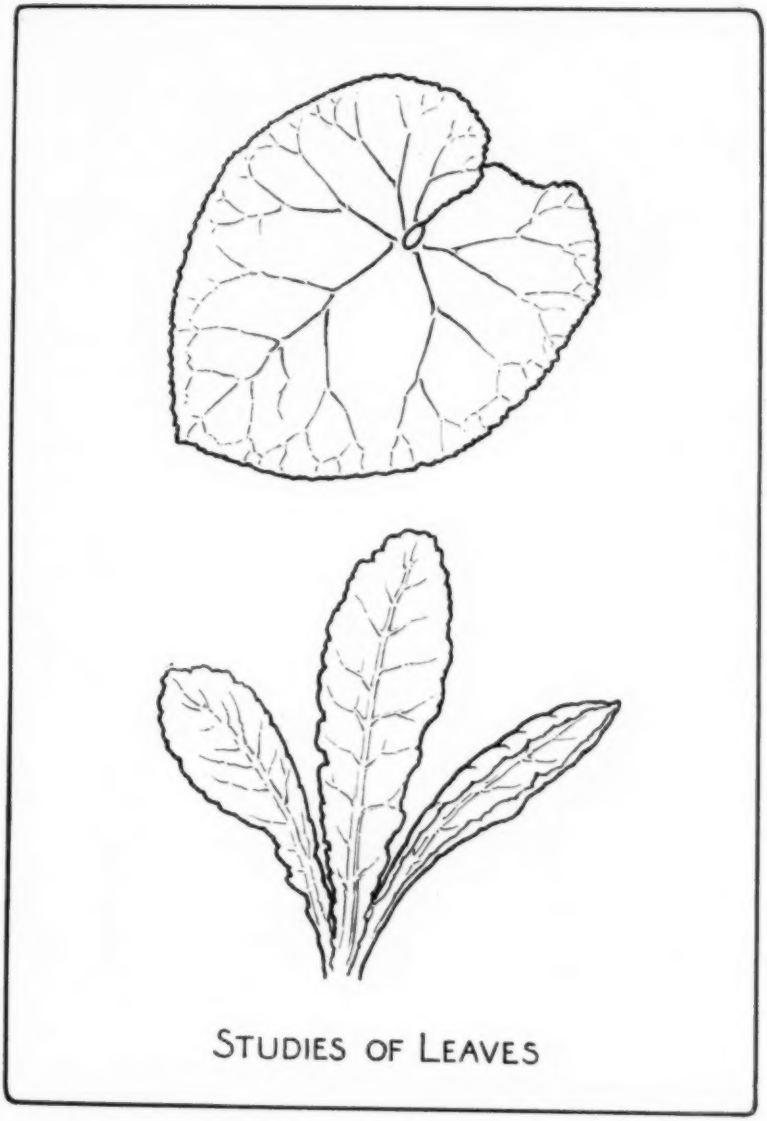
REPRESENTATION IN THE HIGH SCHOOL

Plate X shows careful studies of leaves with accented outlines. Such leaves and flowers as may be available will furnish all the student need to ask in the way of educational material. These drawings are in pen-and-ink.

Plate XI.— The two drawings on this plate show serious studies of animal and plant life such as advanced students should attempt in freehand drawing. The medium may be pencil or pen-and-ink, anything which demands precision. Especial attention should be given to effective rendering.

DESIGN

Plate XII.— Examples of surface patterns developed from dots, dots and lines, lines, angles, angles connected by straight and curved lines, and angles modified into curves. These are typical of experiments which may be tried by high school students in producing rhythmic groups of units. The lower part of the plate shows lessons in rhythmic groups of lines and in the cutting of areas into pleasing spaces by rhythmic lines. These may be elaborated into abstract units remotely suggestive of plant forms, and these again may be developed into straight line units. All of these units may form the bases of orderly designs produced by the repetition of those units in orderly sequence.



STUDIES OF LEAVES

Plate X

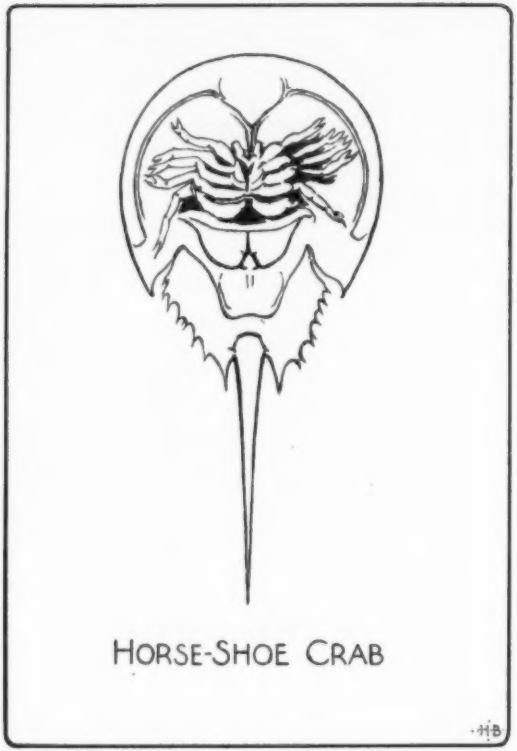


Plate XI

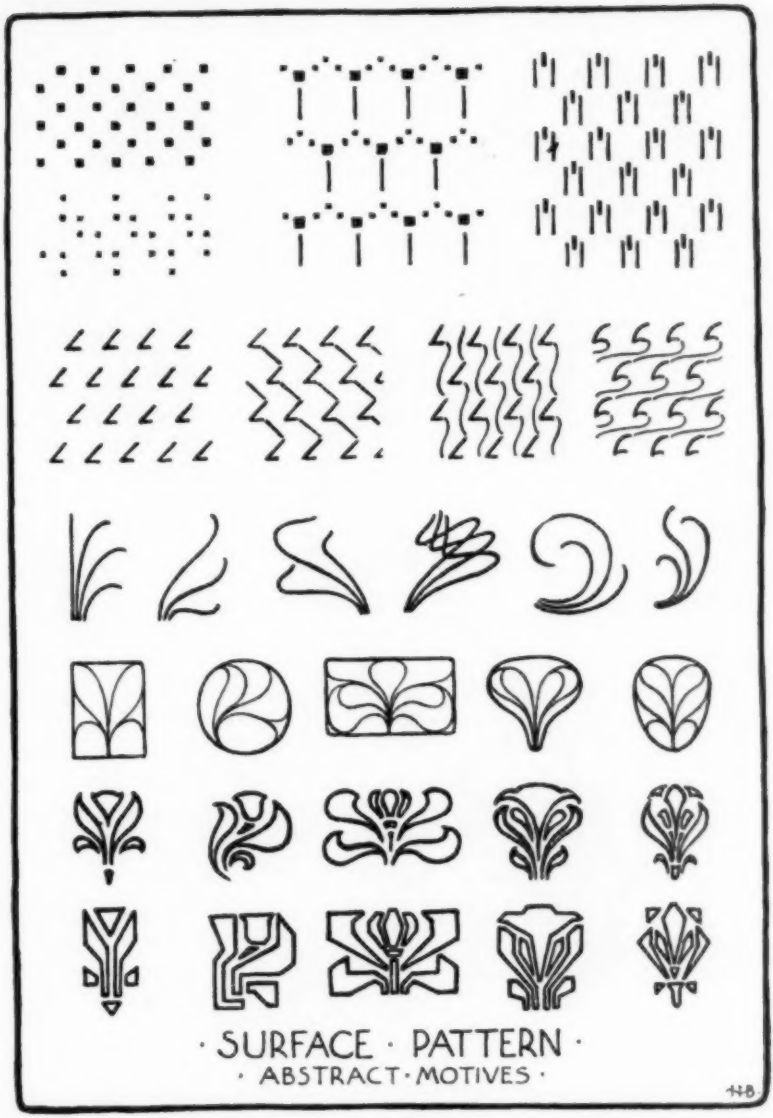


Plate XII

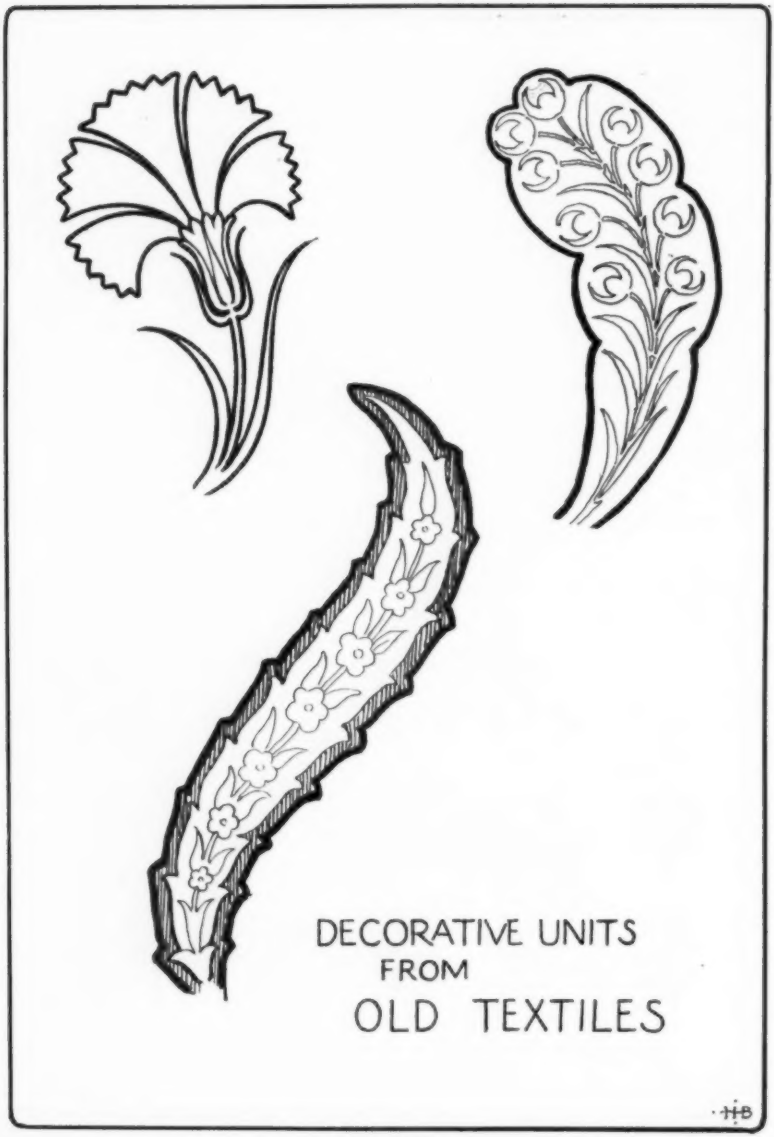
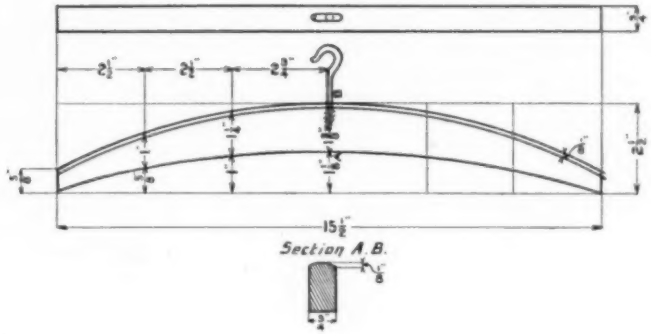


Plate XIII

PROBLEMS IN WOODWORKING
ARRANGED BY
M. W. MURRAY.

PUBLISHED BY
THE MANUAL ARTS PRESS
PEORIA, ILLINOIS.

Coat Hanger



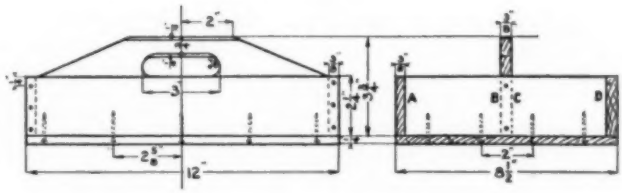
Section A.B.

Sloyd Training School, Boston, Mass.

PROBLEMS IN WOODWORKING
ARRANGED BY
M. W. MURRAY.

PUBLISHED BY
THE MANUAL ARTS PRESS
PEORIA, ILLINOIS.

Knife Box



This box may be made with partitions from A to B, and C to D, and be used as a nail box.

Sloyd Training School, Boston, Mass.

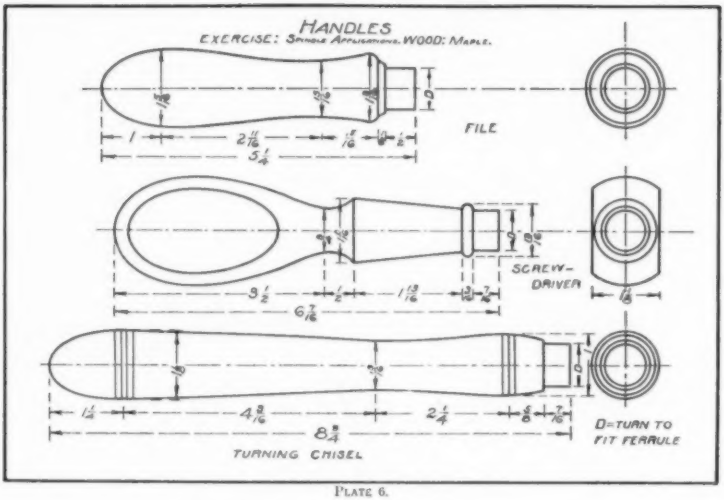
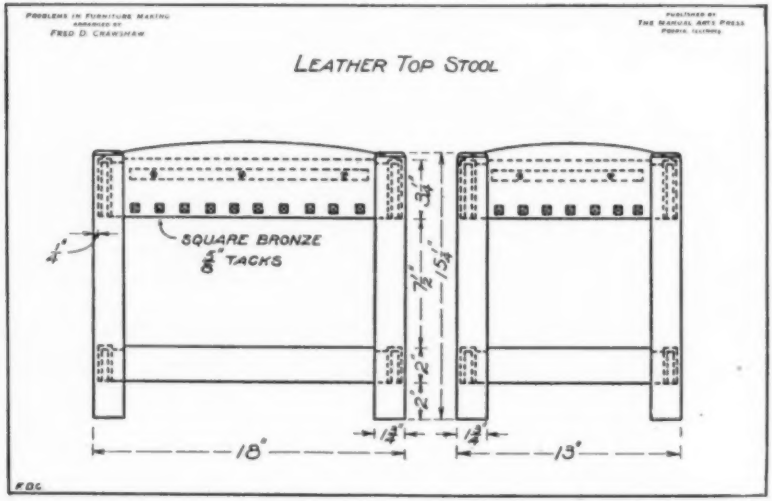

HANDLES
EXERCISE: SPINDLE APPLICATIONS. WOOD: MAPLE.
FILE
SCREW-DRIVER
D=TURN TO FIT FERRULE
TURNING CHISEL

PLATE 6.


PROBLEMS IN FURNITURE MAKING
ARRANGED BY
FRED D. CRAWSHAW
PUBLISHED BY
THE MANUAL ARTS PRESS
PEORIA, ILLINOIS
LEATHER TOP STOOL
SQUARE BRONZE
TACKS
18"
13"
F.D.C.

HISTORIC ELEMENTS

Plate XIII. — This plate gives examples of such careful studies of beautiful units or motives from the historic styles as advanced students of design should make. Among the wealth of material furnished by any handbook of historic ornament, the pupil should be free to select those which have a personal appeal. Units may then be designed similar in spirit, based on the nature material secured through studies in representation.

The four plates here reproduced are from drawings by Harold Haven Brown, teacher of drawing, Stuyvesant High School, New York City, who reserves copyright.

WOODWORKING IN THE HIGH SCHOOL

Plate XIV gives two pages from Problems in Woodworking,* by M. W. Murray, Director of Manual Training, Newton, Mass. Of the coat-hanger, Mr. Murray says: "This has proved a good model for the first one because it furnished an opportunity to review planning before working out the shape. Some teachers have had the boys measure their shoulders and make a model to fit their coats. Such a plan has merit in that it encourages individual work."

The knife-box is a sort of central model, for it may be modified in proportions to hold tools as well as kitchen utensils. The handle presents an opportunity for individual design. A serviceable knife-box may be made with ordinary tools, saw, try-square, bit, and hammer, from the material which almost any small packing box will furnish. It is a problem, therefore, which may be worked out by a pupil with but slight outlay for tools or materials.

Plate XV. — This plate presents pages from two books by Mr. Fred D. Crawshaw, of the University of Wisconsin. The first is from Problems in Woodworking,* and gives designs for handles for a brad-awl, screw-driver, and chisel to be turned from hard wood in a turning lathe. These problems involve appreciation of good proportions and fine curvature. The handles should be comfortable to the hand as well as graceful to the eye. All present opportunities for individual modifications of the essential forms.

* These two books of plates are published by the Manual Arts Press, Peoria, Ill.

The leather-topped stool comes from Problems in Furniture Making.* Of this the author says: "This is a problem in ordinary framing and upholstery. For a beginner, chestnut makes a very satisfactory substitute for oak as it is much more easily worked. A rich dull brown may be obtained by finishing the wood with a turpentine preparation of raw umber first made into a thin paste with boiled linseed oil. The wood is then to be waxed. A coat of very thin shellac may be added. This will obviate the necessity of rubbing down with sand-paper.

HELPFUL REFERENCE MATERIAL ON COLOR AND COLORING

Elementary Color, Milton Bradley.
A Color Notation, Albert H. Munsell.
A Theory of Pure Design, Denman W. Ross.
Color Problems, Emily N. Vanderpoel.
The Laws of Fésole, John Ruskin.
The Principles of Design, Ernest A. Batchelder.
Suggestions for Instruction in Color, Prang Educational Company.
A Course in Water-Color, Prang Educational Company.
The Colorist, J. Arthur H. Hatt.
The Theory of Color in Its Relation to Art and Industry, Wilhelm von Bezold.
Color, a Manual for Students, A. H. Church.
Text-book of Color, Ogden N. Rood.
Maratta's Chromatoscope, Philip Ruxton Company, Chicago.
Atlas of the Munsell Color System, Wadsworth, Howland & Company, Boston.
Sections on Color in Modern Painters, John Ruskin.
See topical index, volume V.
See also chapter on Coloring, in Landscape Painting, Birge Harrison.
Back numbers of the School Arts Book for the months of September, October, May, and June, each year.

* This book of plates is published by the Manual Arts Press, Peoria, Ill.

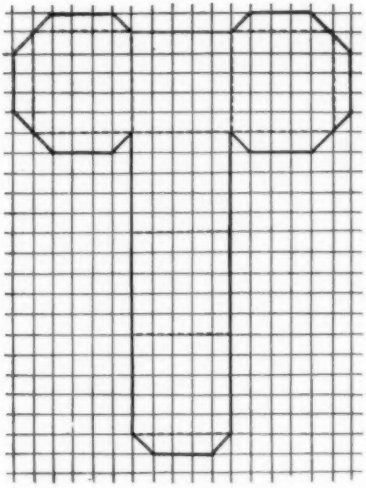
PAPER CONSTRUCTION

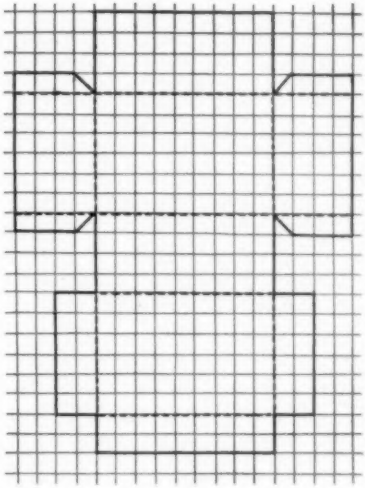
THE series of articles beginning last month will in no sense furnish a progressive course in construction, neither will it be elaborated as to details of specific models, but it will aim to be suggestive of the child's interest in interpreting his environment outside of school, will attempt to put construction into a proper relation with other schoolroom activities, will present only such models as have been made by First Grade children under ordinary public school limitations.

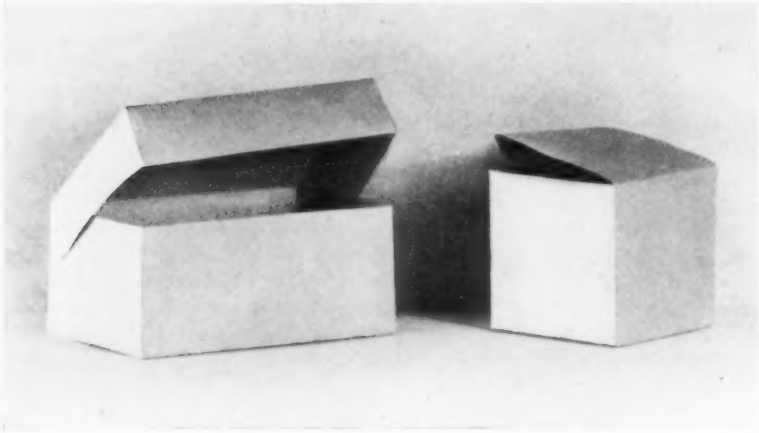
The models for September were planned with especial reference to the child's interest in gardens and in the hope that gardening might become a more vital part of the school work.

In October the home activities have largely to do with the preparation for winter. The packing away of summer garments and unpacking and purchasing of winter clothing naturally suggests the making of trunks and boxes as indicative of the child's understanding of home life.

The two models shown, the trunk and the hat box, may be too difficult for the small people just entering school. If so, they may be simplified, or postponed until spring and other models substituted.







The paper trunk and hat box completed.

Some have found it easier to omit laps, pasting strips of tissue paper over edges that should be joined, but the discovery by the children of the necessity for laps is worth providing for. The older children will probably demand laps on the overlapping lid of the trunk and may want a separate cover on the box.

These models may be developed from the forms used in drawing or in teaching a ratio system of number and may serve as a connecting link with the work of the kindergarten. Together with boxes of various forms and sizes, they may be used to give life and interest to much drill in arithmetic,— problems in addition, subtraction, multiplication, division, and "tables" being worked out from the squares on the surface. Boxes may be made from directions given in terms of arithmetical relations such as: Construct a box two-thirds as long and half as high as one shown. Construct a box having twice the volume of one previously made. Originality may be developed by asking the children to design boxes of good proportion for definite uses, — a shirt-waist box that could also serve as a window-seat, a glove-box, a box for shoes, for collars, for a clock, a stick-pin, a calendar. All these problems in construction may later furnish problems in square and cubic measure, each square on the model being understood to represent an inch or a foot. Or the problem

may be reversed — the children being required to construct a box of given volume.

From the standpoint of problems in construction the chief value to the child is in his power to work out models independently from a diagram and later to originate along similar lines. The part of the teacher, therefore, is to bring this about as soon as possible. What, then, shall be the test for the results? Not perfect workmanship — the work is to be the child's, not the teacher's, and is to be judged according to his ability — but interest, growth in muscular control, in quickness of perception and apperception, stimulation of imagination, accuracy, originality, — these are the results to be expected and brought about. Are they not fundamental in the development of a child?

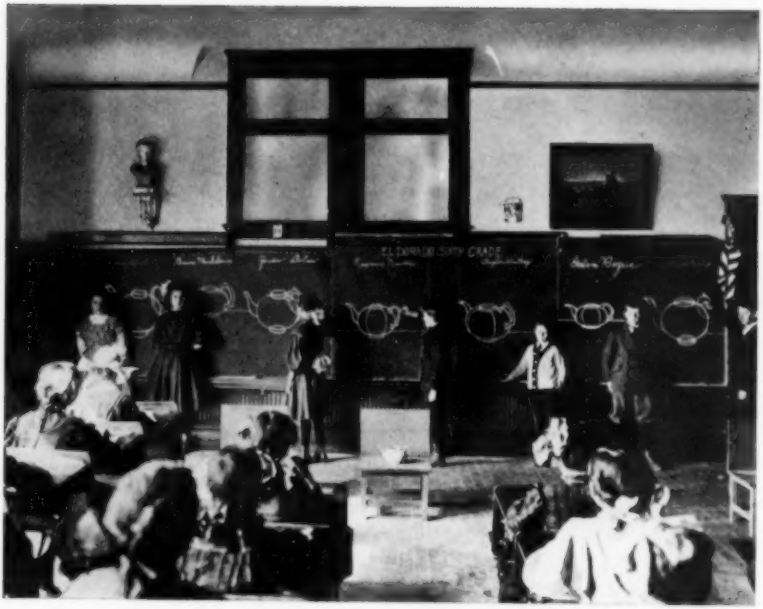
ANNA J. LAMPHIER
North Adams, Massachusetts

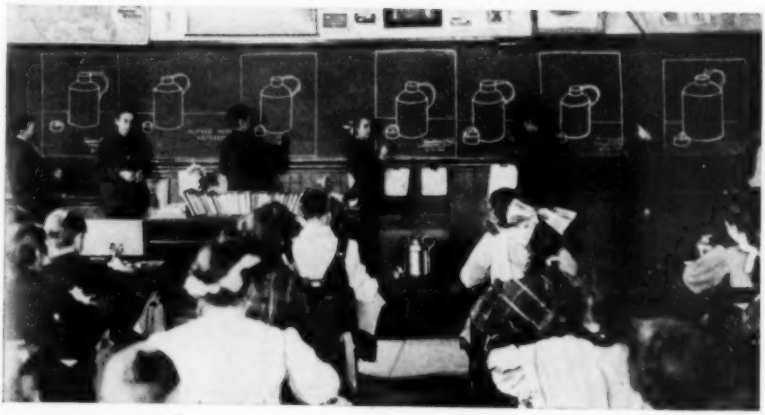
THE EXHIBIT

THE Exhibit this month is an exhibit of pupils at work rather than of pupils' work. The photographs reproduced are from Stockton, Cal., where Mrs. Grace A. Stewart is Supervisor of Drawing. In a letter which accompanied the photographs Mrs. Stewart said: "When we are drawing from objects I allow some of the children to work at the board from memory after they have done all they can at their seats. I think it is good practice to draw on the board, and then it keeps those who get through first out of mischief." Mrs. Stewart might have added that such practice helps to develop the power to draw, as the work which has come from Stockton to many of the monthly contests amply proves.

The plates show studies of foreshortening in the sixth and seventh grades, studies in perspective and sketching from nature in the eighth and ninth grades.

Persistent practice under guidance is the price of successful work in drawing in every grade.





HERO'S ENGINE

THE mechanical principles involved in this engine were used by Hero in B. C., and the descriptions of the first attempts to use the power of steam which are given in the encyclopedias will be of interest in connection with the construction.

The materials necessary are a low bottle with a large mouth (an ink bottle), a tin can, preferably with a "slip cover," a knitting-needle, two bicycle spoke nipples, a large brass rifle shell or other tube, a cork to fit the tube, and the wood to make the supporting frame.

The tools needed will be the ordinary woodworking tools and a soldering outfit,— the ten-cent store kind will answer.

Make the lamp first, if a cartridge is not to be had the tube may be made by rolling up a piece of tin; beside the hole for the tube there should be a little notch down the side of the cork to admit air. The wick may be candle wick or string doubled a number of times.

Be careful to punch the hole for the needle in the exact center of the can, and have the needle and the surrounding surface of the can bright before attempting to solder. It may be found necessary to "tin" the places on the steel needle by cleaning the surface with a file, placing the needle on a brick with a little piece of solder and heating the needle and solder with the soldering iron, turning the needle in the melted solder until the surface is covered with a thin coat of solder; use acid or resin.

File the large end of the spoke nipples flat and solder them to opposite sides of the can at the top; punch thru the can by driving a fine brad thru the nipples; close the nipple with a drop of solder and file a notch nearly thru the side of the nipple with the corner of a file and with a pin punch a small hole thru. Solder a piece of the rifle shell one-half inch long on top of the can and punch a hole thru to admit the water.

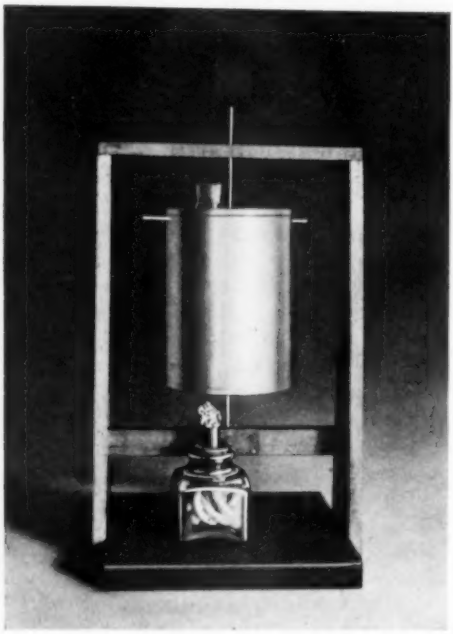
Make the frame to suit the lamp and can used, cover the center of the lower cross piece with tin or brass to protect it from heat, make a dent in the center for a step for the end of the needle. Cut the head from a fine one and one-half inch brad, bend the ends at right angles and insert in holes in the top piece so that it will hold the needle in the notch.

Operation: fill the lamp with alcohol, being careful to have no alcohol on the outside; fill the boiler one-third full of water; place the boiler in the frame and the lighted lamp below. When steam comes out of the holes in the nipples with force start the boiler gently.

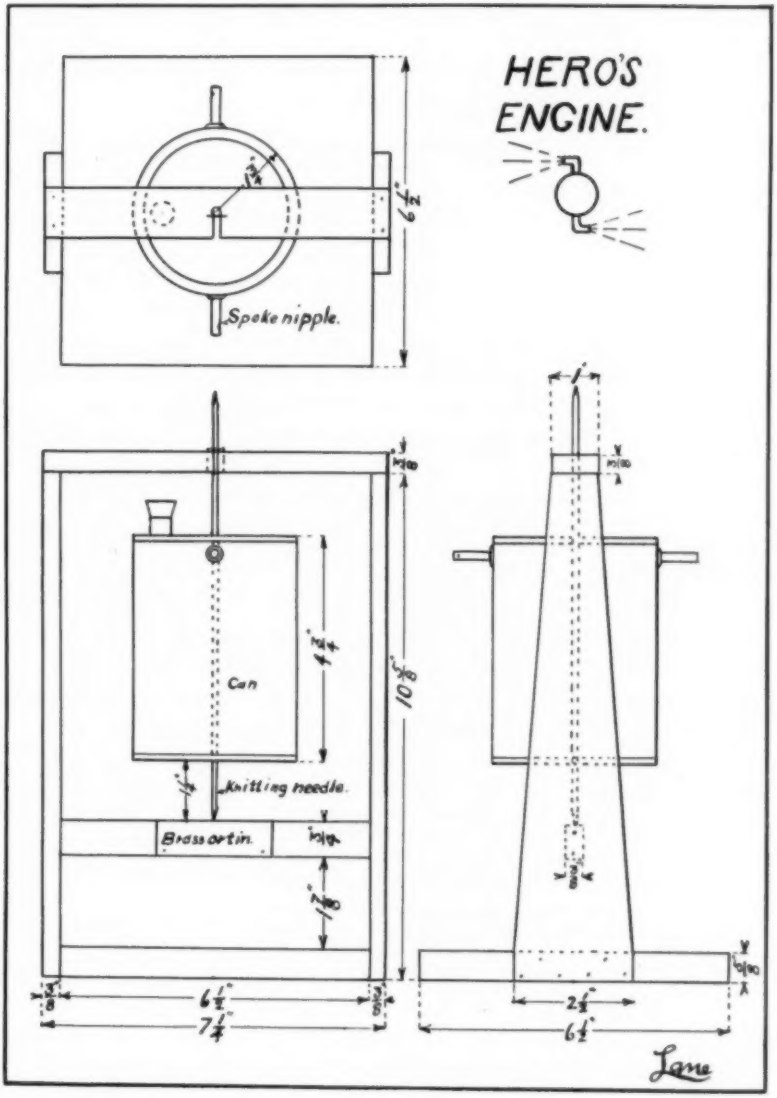
If the engine is allowed to run too fast the centrifugal force will throw the water out and up and allow the solder in the center of the bottom to melt.

Small paper toys like men sawing wood, etc., may be operated from the top of the shaft, or a cardboard disk to be used as a color wheel may be added.

FRANK P. LANE
Hill Institute
Northampton, Massachusetts



A working model of Hero's engine.


HERO'S
ENGINE.
Spoke nipple.
Can
Knitting needle.
Brass artin.
Lane

LITTLE NUT PEOPLE

By Pearl Rivers, Fall River, Mass.

Old Mistress Chestnut once lived in a burr
Padded and lined with the softest of fur.
Jack Frost split it wide with his keen silver knife,
And tumbled her out at the risk of her life.

Here is Don Almond, a grandee from Spain,
Some raisins from Malaga came in his train.
He has a twin brother a shade or two leaner,
When both come together we shout, "Philopena!"

This is Sir Walnut; he's English you know,
A friend of my Lady and Lord So-and-So.
Whenever you ask old Sir Walnut to dinner
Be sure and have wine for the gouty old sinner.

Little Miss Peanut, from South Carolina,
She's not 'ristocratic, but no nut is finer.
Sometimes she is roasted and burnt to a cinder;
In Georgia they call her Miss Goober, or Pinder.

Little Miss Hazelnut, in her best bonnet,
Is lovely enough to be put in a sonnet;
And young Mr. Filbert has journeyed from Kent,
To ask her to marry him soon after Lent.

This is old Hickory; look at him well.
A general was named for him, so I've heard tell.
Take care how you hit him. He sometimes hits back!
This stolid old chap is a hard nut to crack.

Old Mr. Butternut, just from Brazil,
Is rugged and rough as the side of a hill;
But like many a countenance quite as ill-favored,
He covers a kernel deliciously flavored.

Here is a Southerner, graceful and slim,
In flavor no nut is quite equal to him.
Ha, Monsieur Pecan, you know what it means
To be served with black coffee in French New Orleans.

Dear little Chinkapin, modest and neat,
Isn't she cunning, and isn't she sweet?
Her skin is as smooth as a little boy's chin,
And the squirrels all chatter of Miss Chinkapin.

And now, my dear children, I'm sure I have told
All the queer rhymes that a nutshell can hold.

EDITORIAL

EVERYBODY loves color; but nobody knows color. Nobody has yet solved the problem of producing by rule fine harmonies of color. Less is known about the art of coloring than is known about the art of poetry or the art of music. The various kinds of meter are down in the rhetorics; a book is published that gives all the rhyming words in the English language! Knowledge of musical forms and chords may be acquired by study. But we have no sure guide to beautiful coloring.

The science of color is getting on. Mr. Munsell's Photometer now makes possible the accurate measuring and defining of every hue.*

This triumph strengthens the hope that the art of coloring may be developed, at least as far as the art of poetry has been developed. As we may be sure of grammar, meter, and rhyme, to the extent of orderly versification, so we should be sure of hues, tones, and areas, to the extent of pleasing effects of color.†

The problem of coloring is complicated by the phenomena called by Chevreul "Simultaneous Contrasts." The general law of these phenomena may be stated thus: Every aggressive color tends to force its complementary upon the surrounding colors. Familiar examples of this are the darkening of the horizon above the moonglade, the greening of a pale sky by

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* Mr. Albert H. Munsell, trained in the Massachusetts Normal Art School, and in the Ecole des Beaux-Arts, Paris, is a portrait-painter by profession, and teacher of artistic anatomy and color composition in the Massachusetts Normal Art School, Boston. He has patented new instruments for color measurement, and invented a system of pigment colors, widely recognized as valuable in interpreting color phenomena. His system is described in A Color Notation, and further illustrated in a unique Atlas.

† "All we can hope to achieve is Order. Beauty is reserved for the Masters. Beauty is a supreme example of Order, achieved instinctively and recognized intuitively." — Dr. Ross.

the presence of purple clouds, the changing of the apparent hue of lace or other ornament by the ground upon which it is placed, the toning of a picture by means of its mount. The significance of these phenomena is made evident by an analogy in the realm of music. Given the major chord, represented by do, me, sol, do, or 1, 3, 5, 8, any note in this chord may be emphasized without destroying the harmony ; but given a group of hues, producing a harmony, let us say, an orange, a green, and a purple, the emphasis of any one of these by increasing its area or its intensity, immediately sharps or flats its neighboring colors and disturbs the harmony. This accounts for the dismal failures often made by students who attempt to copy the colors of a Japanese print in a design of their own. In the print the colors are accurately adjusted to one another in area, value, hue, and intensity, and are often defended from one another by black and white. In making the transfer, if the relative areas of the colors are changed, or if the tone of the paper differs, or if the black is omitted, the fine harmony will not reappear.

We need a new color term, a term that shall mean the power of a tone to influence other tones. Perhaps potential would do. The potential of a red-purple, for example, is higher than the potential of a yellow of the same area and intensity. Until we know more than we do now about the potential of the different colors when in combination, anything like rules for producing color harmonies are at best but safeguards for beginners.

Meanwhile we must get on as best we can, after the fashion of those who have gone before, trusting to the judgment of the experienced, and following precedent. In a papyrus from the Fayoum, dating from about the third century, a father writes to "his sweetest son, Hierax," advising him as to the proper colored robe to wear with his purple cloak. The wisdom of the

Middle Ages seems to be summarized in an old book published in Edinburgh at the beginning of the last century.* Here is its word about coloring :

"When colours are employed, they should be used with great caution and judgment. Nothing is so disgusting as to see coloured drawings with red, greens, and blues, laid on in the most violent manner, without any regard to harmony. . . . Though we should have recourse to the study of nature, in preference to any master for the study of colouring, yet it requires some judgment to know what part of nature is to be studied . . . for in nature herself, there are many parts which are bad, and to copy them would do more harm than good. . . . Old thatch, old tiles, rotten wood; in short all objects which are covered with moss . . . are most perfect and harmonious in colouring. . . . An old house almost tumbling down, whose parts are broken and ruinous, the whole stained and tinted with a variety of chaste and harmonious colours by the pencil of nature is infinitely preferable, as a subject, to any new house or gentleman's seat."

The final deductions of the learned author are as follows :

"A single distinct colour is always bad in a landscape. . . . Avoid as bad all objects which are of a uniform decided colour. . . . The fewer colours that are used the better, as harmony is most easily preserved." †

But this renunciation of gay color, this vow of poverty in coloring, does not appeal to the modern mind, nor is the modern mind content to remain subject to dogmatic statements about a single robe and cloak. We demand a full palette and general principles.

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* "The Academy of Science and Art, or New Preceptor: Containing a Complete System of Useful and Accomplished Education, as well as General Knowledge. Printed by John Moir for the late James Morison, Bookseller, Perth; 1810."

† Once when asked about Whistler's ability as a colorist, Sir Lawrence Alma-Tadema exclaimed, "Anybody can paint harmonies with mud!"

Foremost among the students of this problem of fine coloring stands Dr. Denman W. Ross, a man of thoroly trained mind, unusually sensitive to beauty, whose devotion to the subject has been proven by years of patient investigation and daily personal practice to test every theory. His book, A Theory of Pure Design, a book not to be read but to be studied, is by far the most valuable document we have dealing with the theory of coloring.*

Another persistent student is Mr. Louis W. Wilson, trained at the Julien School, Paris, and the Royal Academy, Munich, teacher of drawing and painting from life and the antique, at the Art Institute School of Chicago. Applying the scriptural test, "By their fruits ye shall know them," his theory of coloring must embody truth, for the pupils under his direction turned out a higher average of good work in portrait composition in color from life last year than I ever happened to find elsewhere. Mr. Wilson's theory has not yet been put into book form. Until it is so published, together with the necessary pigments for producing his "musical scales in color," the theory is not applicable in the public schools.

A third prominent student of the difficult problem of coloring is Emily Noyes Vanderpoel of New York, a painter by

* This book appeared in 1907. In reply to a recent letter of inquiry I received the following from Mr. Edgar O. Parker, a pupil of Dr. Ross, and for many years his assistant in experimentation.

"Dr. Ross wishes me to tell you that he has no reason to change the classification and analysis of tones and tone relations as given in his book on Pure Design in the diagram opposite page 140. Among the many possible sequences which may be used in Pure Design and in Representation (see pages 143-157) he particularly recommends the very simple sequences in which the colors are taken at intervals of the fourth or at intervals of the fifth in the Left and Right Modes. He suggests that we call the Right Mode the Violet-down-to-Red Mode, and the Left Mode the Red-down-to-Violet Mode. The terms Right and Left have not been understood."

profession, whose book, Color Problems, is in a class by itself. Of the one hundred and seventeen colored plates, fifty-four give careful analyses of the color schemes of beautiful objects, tiles, fabrics, rugs, vases, manuscripts, and objects in nature,—and fifteen others give color notes from such things as a corroded propeller blade, a tree fungus, a slice of orange, a bird, a flower, a shadow, a cloud, a hillside, a trout pond, a winter landscape. The color analyses not only give the original colors, but the relative amounts of each. If such analyses could be extended into the thousands, certain principles might emerge to guide us in teaching color harmonies. As a hint, consider the fact that out of the fifty-four beautiful color schemes analyzed by Mrs. Vanderpoel, in only seven are the cool colors dominant; and the additional fact that a "cool gray" occurs as a color note but twice. "First get your facts," said Mark Twain to Kipling; "then you can manipulate them to suit yourself."

But artists are not alone in this quest. Business men are keen to see the value of color theories. A theater manager discovers that the violet slippers made at great expense for his chorus girls appear a dirty gray before the footlights. A knowledge of Chevreul's "simultaneous contrasts" would have saved him. A change in the color of paper used in making the shoe boxes in a big department store, from yellow to gray, added ten per cent. to the cost of electric lighting the department. A knowledge of the relative "potentials" of colors would have saved that. Business men are beginning to see the advantage of fine color in advertising. Consequently the printers are awakening to its importance. The correspondence courses managed by the International Typographical Union deal largely with the problem of color. The Philip Ruxton Company of Chicago has prepared and offers for sale a cabinet of printing

inks, with a key chart known as Maratta's Chromatoscope, which enables printers to produce with certainty pleasing arrangements of color. The publications of this company offer many valuable suggestions to the thoughtful teacher. Mr. E. C. Andrews of Chicago is a painstaking student of color as applicable in printing. His illustrated articles in The Inland Printer have attracted wide attention, and are destined to influence the trade.

¶ Another hopeful sign of the times is the development of the processes for the facsimile reproduction of color. These processes are making available for study by the children the best examples the museums afford. The Prang Drawing Books, the Manual Arts Books, published by the D. C. Heath Company, and the Applied Arts Books, published by Atkinson, Mentzer & Grover, are rich in colored illustrations. Recent color plates in the leading monthlies are of great beauty ; but these will be surpassed,— so we are promised, — by the plates to appear in a new magazine, soon to be issued by the National Arts Publishing Company of Boston, to be known as " Color," which will have for its field " Beauty of color in every phase of life."

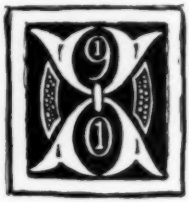
The latest triumph in color reproduction is in the realm of painting. The Brown-Robertson Company of Chicago has secured exclusive rights for the sale in this country of the facsimile reproductions on canvas of the famous masterpieces. These reproductions are of extraordinary fidelity. So perfectly do they follow the original that not only the color but the very brush strokes are preserved. The method of the artist is as evident as in the original; thin color, heavy color, glazing,— whatever the technique, there it is recreated. Future numbers of The School Arts Book will describe in detail some of these wonderful repro-

ductions, destined to inaugurate a new era in schoolroom decoration.

¶ The frontispiece this month gives a suggestion of the fine things now available for schoolroom decoration through the enterprise of Atkinson, Mentzer & Grover. Some of the most prominent artists of Europe have made what are known as "autolithographs," by drawing directly upon the stone, thus producing prints that reflect the thought of the artist and retain the quality of his work. These "Rhine Prints," as they are called in this country, are not photographic reproductions ; they are as truly originals as are the prints known as "etchings." Some hundred and forty subjects, varying in size from 7 x 10 inches to 2 x 3 feet or more, are now listed, and nearly half of them shown in color, in The Rhine Prints catalog. They are simple in treatment, beautiful in color, and reasonable in price. The reign of the somber photograph in mournful frame is over.

¶ The cover stamp this month is from one of the seven hundred round plates of gold found by Dr. Schliemann and the Greek Archaeological Society, in the ancient citadel of Mycenae. Formerly classed as Mycenaean art, it is now known to be of Minoan origin. Many similar plates of gold have been found in the palace at Knossos, and are to be seen in that fascinating museum at Kandia, — plates incised with designs from flowers, butterflies, and wave-scrolls, and with geometric patterns, as well as with such figures as this, which is, undoubtedly a decorative interpretation of the cuttle fish. The surest way to draw this figure correctly is to sketch it first in pencil, then to begin inking-in with the central parts of the spirals.

¶ October has Scorpio for its sign. Scorpio was the mythological monster that caused the disastrous runaway of the steeds of Apollo, when Phaethon attempted to drive them. In all our northern zone the foliage flames this month, and the mountains are veiled as with smoke, perhaps in echo of that escapade. Scorpio is appropriate as a decoration for cover papers or calendars in October. The rectangular stamp is from a German publication ; the circular one from a cover of The School Arts Book in 1906. Antares (rival of Mars), the heart of the scorpion,



and its sign, are shown in the tail-piece, page 139. October was so named because it was the eighth month of the old Roman year. It is the tenth of ours. The third device on page 190 embodies O for October, 8 for eighth, X for tenth, and the year 1910. The form was suggested by an old Italian initial by Vicentina, 1523. The birth stone for October is said to be the Opal.

"October's child is born for woe,
And life's vicissitudes must know;
But lay an Opal on her breast,
And hope will lull those woes to rest."

The brilliant reds, yellows, and greens of the October landscape seen through the pearly mists of autumn are indeed opalescent. The color which symbolizes hope is, however, a yellow-green, the color of the newly-sprouted grass; Ruskin associates this color with October. Perhaps it is more appropriate to the month than any other color, for the reason that in October we are led to think of the seeds in which the living green of the next spring is stored safely away. Miss Weston's symbol for October is the fall-ing leaf. The fringed gentian, to whom Bryant said:

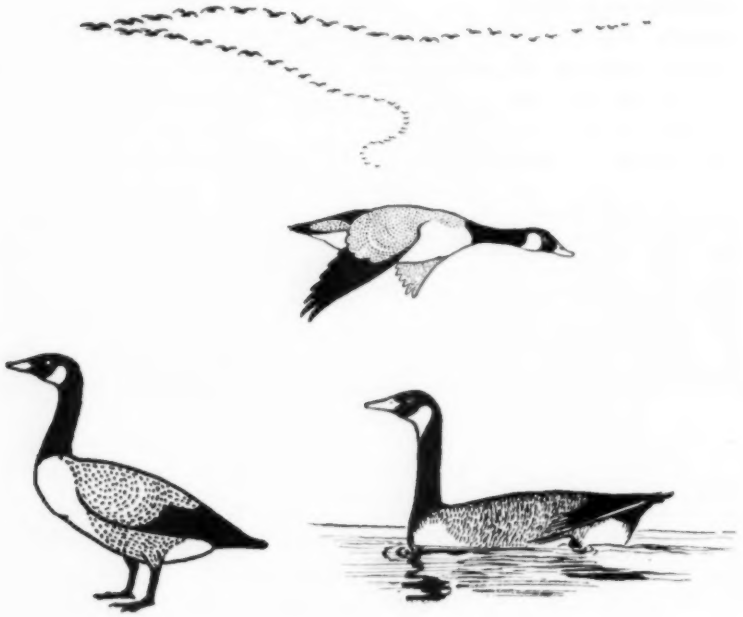
"Thou waitest late, and com'st alone,
When woods are bare and birds have flown,
And frosts and shortening days portend
The aged year is near his end."

"It lingers long," writes Colonel Higginson, in his Procession of the Flowers, "each remaining blossom growing larger and more deep in color; and after it there is nothing for which to look forward save the fantastic witch-hazel."

The fringed gentian is the motive of the tail-pieces, pages 134 and 144.

The bird inevitably associated with October is the Canada goose, popularly known as the wild goose. "Probably the migration of no bird attracts more universal interest than that of the wild goose," says Chapman. "The pilgrimage of the Canada goose appeals to us all with the directness of a personal

experience." The figure on this page shows what Chapman calls "the living wedge of longnecked birds passing high overhead." The other illustrations show a closer view of the goose in flight, standing, and swimming. The time when the migration begins



varies, according to the season, from early October to early December ; but in October the ear of the bird-lover is alert for the musical "honk, honk, honk," about sunset, of these wondrous voyagers of the upper air, whose early appearance means a long winter for the northern zone. A single wild goose (a rare

sight) inspired Bryant to write, at the age of twenty, his immortal poem, To a Waterfowl, beginning,

"Whither, midst falling dew,
While glow the heavens with the last steps of day,
Far, through their rosy depths, dost thou pursue
Thy solitary way?"

Bryant's conclusion strikes the note of the universal :

"He who, from zone to zone,
Guides through the boundless sky thy certain flight,
In the long way that I must tread alone,
Will guide my steps aright."

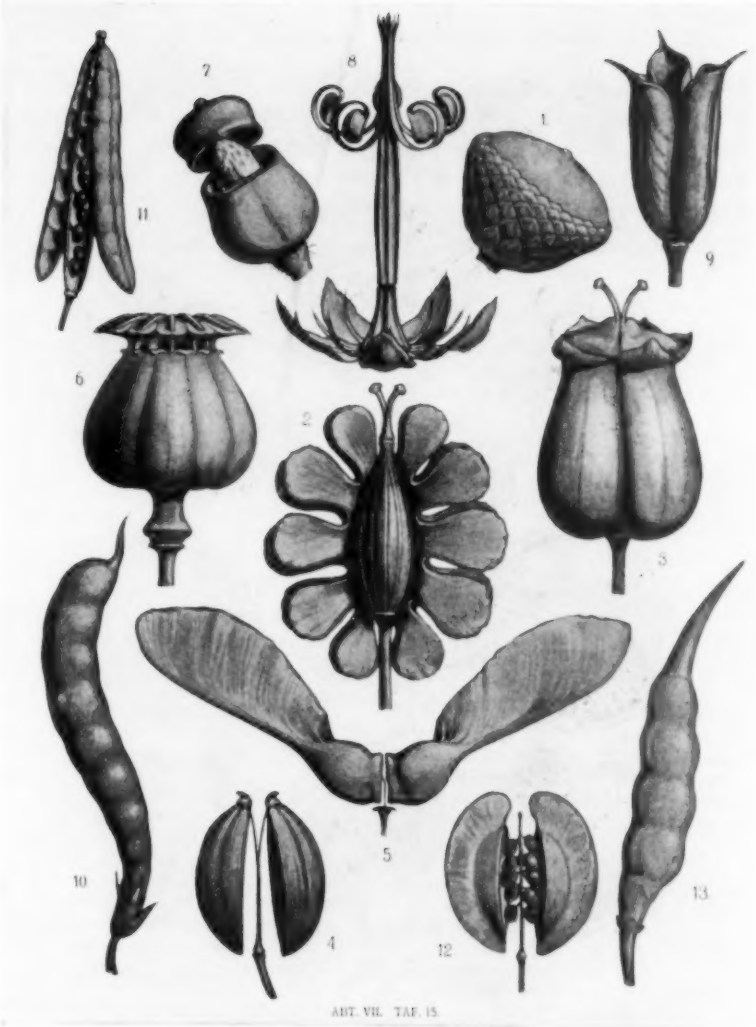
But for the children October is distinguished as the month of nutting and of pranking. The poem, Little Nut People, is therefore given on page 182. It might serve as a basis for illustrative drawing. The tail-piece on page 193 is a reminder of Hallowe'en, when Jack-o'-lantern reigns supreme. In the design he has his wreath of withered leaves, for he has attained immortality, and should have his crown, albeit somewhat battered.

¶ The supplements this month are of permanent value. One continues the course in design given at the School of the Museum of Fine Arts, Boston, by Miss Child; the other reproduces in color, for the first time, so far as I know, the circuit of Zodiacal Colors, described by Ruskin in his Laws of Fésole. This is published also in the form of a cardboard chart for hanging in schoolroom and workshop, as a guide in combining colors.* No lovelier pairs of colors dancing in a ring are likely to be found. Of the opposites Emerson's fine phrase is true :

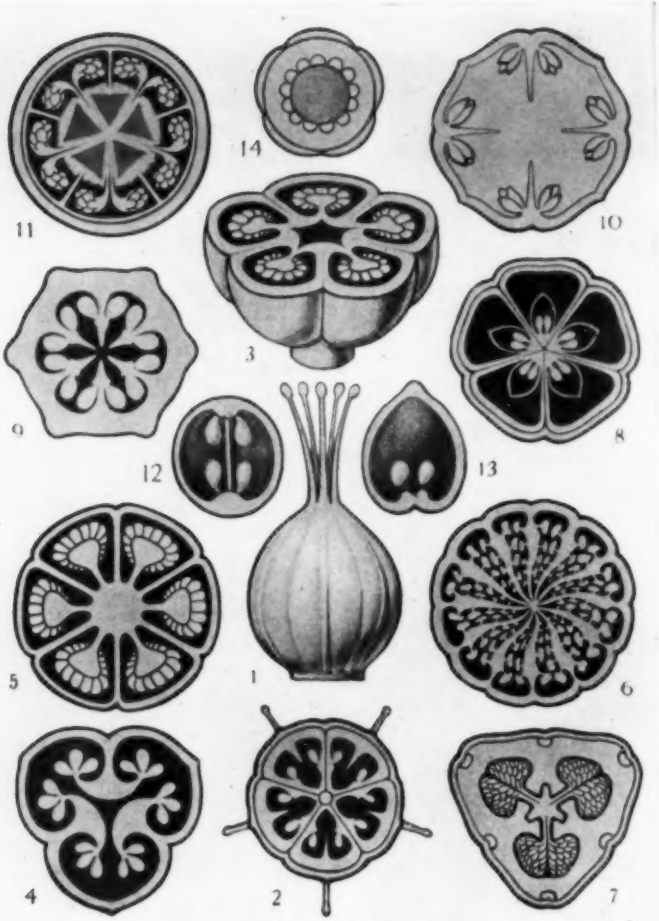
"Each the other adorning."

¶ But in our enthusiasm for beautiful color, let us not forget beautiful form. Rejoicing in fine effects, let us not overlook fine drawing. The nature material of the fall months is so rich in forms of subtle proportion, exquisite curvature, and delicate modeling, forms that will keep shape indefinitely without wilting, that one is tempted to advocate nothing but nature study, drawing, and literature appropriate to the occasion, every day from the opening of school to Thanksgiving. Among all the inspirations to faithful study of natural forms, and faithful delineation of them, I know of nothing equal to Professor Meurer's masterly volume, Formenlehre des Ornamentes. The book ought to be in every school library in America. Pages 195 and 196 reproduce two of its rich plates; one containing drawings from seed pods, the other from fruit sections. How few there are in the United States who can draw like this ! Let us learn how to do it.

* Published by The National Arts Publishing Company, 200 Summer Street, Boston, Mass. Price, 6 cents.



Drawings from seed pods, from Professor Meurer's book, Formenlehre des Ornamentes.



ABT. VII. TAF. 5.

Drawings from fruit sections, from Professor Meurer's book, Formenlehre des Ornamentes.

¶ The widely advertised contest inaugurated by the American Crayon Company met with a generous response. Drawings by the thousand passed under the eye of the jury, which consisted of Mr. James Hall, Miss Lucy Silke of Chicago, Miss M. Emma Roberts of Minneapolis, Mrs. M. E. Riley of St. Louis, and the Editor of The School Arts Book. The ten successful schools (each winning prizes valued at $25) are

High School, Stockton, Cal.
Township High School, Oak Park, Ill.
Eighth Grade, Pittston, Pa., Mary Keating, Teacher.
Eighth Grade, North Billerica, Mass., Mary Keating, Teacher.
Sixth Grade, Oronoque, Conn., Myrtilla Thompson, Teacher.
Third Grade, Utica, N. Y., Anna Hopkins, Teacher.
Collegiate Institute of Holy Angels, Fort Lee, N. J., Sisters of Notre Dame.
Fourth Grade, Oakdale, Cal., Eva B. Sherms, Teacher.
Second Grade, Meriden, Conn., Cathryn Carver, Teacher.
First Grade, Manistee, Mich., Miss Loeb, Teacher.

The successful individual contestants for the cash rewards in the five classes of the contest are as follows :

CLASS FIVE—Open to all High School Pupils.
First Prize—$50.00. Bess Pritchard, Stockton, Cal.
Second Prize — $25.00. Mary Jones, Oak Park, Ill.
Third Prize—$10.00. Wm. Valgren, Fitchburg, Mass.
Five Next Best—$2.00 Each. Isabelle O'Connor, Holyoke, Mass.; Olive Schlichtman, Bethany, Cal.; Harold Von Detten, Stockton, Cal.; Coutnoy Boss, Memphis, Tenn.; Loomis F. Steiny, Stockton, Cal.

CLASS FOUR — Open to all Pupils in the 7th and 8th Grades.
First Prize — $40.00. Theodore Belarsky, Dupont, Pa.
Second Prize — $20.00. Flor. E. Naston, N. Billerica, Mass.
Five Next Best — $3.00 Each. Salim Jutila, Calumet, Mich.; Nora Greiner, St. Paul, Minn.; Harriet E. Woodruff, Garrett Hill, Pennsylvania; William Hasse, Quincy, Ill; Mary E. Fellers, Sebastopol, Cal.

CLASS THREE — Open to all Boys and Girls in Fifth and Sixth Grades.
First Prize — $30.00. Marcella Blanc, Fort Lee, N. J.
Second Prize — $15.00. Gollford L. Ryder, Oronoque, Conn.
Ten Next Best — $2.00 Each. Vida Berry, Dallas, Tex.; Yvonne Blane, Fort Lee, N. J.;

Ruth A. Cameion, Chicopee, Mass.; Isabella Cooke, Mt. Royal, N. J.; George Turnbull, Alton, Ill.; Arthur Reutter, Evansville, Ind.; Louis Miller, N. Tarrytown, N. Y.; Marjorie Moshier, Hopkinton, Mass.; Hannah Rubin, Chicago, Ill.; Emma Desrosier, Crookston, Minn.

CLASS TWO — Open to all Boys and Girls in Third and Fourth Grades.
First Prize — $25.00. Walter Fehr, Utica, N. Y.
Second Prize — $15.00. Harban Peters, Oakdale, Cal.
Ten Next Best — $2.00 Each. Carrie Small, Westfield, N. J.; Dorothy E. William, E. Los Angeles, Cal.; Anna M. G. Reich, Brighton, Mass.; Myrth Blomgale, Manistee, Mich.; Alice O'Connell, Brighton,Mass.; Mildred Haines, Manistee, Mich.; Teddie Meahkee, Blackrock, N. Mexico; Harriet D. Holcombe, Boston, Mass.; Lennia Mattson, Calumet, Mich.; Brevard Rainey, Nashville, Tenn.

CLASS ONE — Open to all Boys and Girls in First and Second Grades.
First Prize — $20.00. Paul Mason, Meriden, Conn.
Second Prize — $10.00. Arvid Thorin, Manistee, Mich.
Ten Next Best — $2.00 Each. William Butscher, Raton, New Mexico; George Hodinger, Utica, N. Y.; Lena Wenzel, Manistee, Mich.; Marguerite Teagarden, Dallas, Tex.; Beryl Cross, Manitoba, Can.; Velma Bauman, Manistee, Mich.; Marguerite Radell, Utica, N. Y.; Leonard Steele, Hiawatha, Kan.; Edna M. Welker, Sterling, Ill.; Warren Ondalacy, Blackrock, N. Mex.

In addition to the cash prizes, boxes of water colors will be sent to 475 contestants. Upon request a full report of the contest will be mailed free to any address.

¶ Notice the changes in the monthly contest. Let some of your pupils have the pleasure of an award. Remember that they are children, not adults. The prizes will stimulate them to better work.

¶ Show your friends the enriched School Arts Book — every teacher should have the Festival Number, and the next, and — well, they will continue to grow better, every month.

CORRESPONDENCE

Milwaukee, Wis.

Dear Mr. Bailey :

We thought perhaps you would be interested in publishing a description of a game we use in the kindergarten and in first grades to teach the children color. One of our kindergarten teachers has an original plan of teaching the chromatic scale of color, using a game and a little song to illustrate. I visited the kindergarten a few weeks ago, and I wish you could have seen the children under Miss Mabel Comstock's direction playing the game and singing the song.

The following is the song :

THE COLOR FAIRIES

Six little fairies came
To help the fruit to ripen,
Six little fairies came
All the leaves to brighten.
Brush in hand they tripped along,
Keeping time together,—
Red and orange, yellow, too
Green and blue and purple,
Six little fairies came
To help the fruit to ripen,
Six little fairies came
All the leaves to brighten.

To play the game, arrange the children in groups about the room, each group representing something in nature to be colored by the fairies. Children in the group representing an apple orchard, stand in rows, with finger tips and thumbs of each child touching, to represent the apples to be painted by the red fairy. Those in the second group, representing a cornfield, are divided into two sections. The children in one remain standing, with arms held in a drooping position to represent the long leaves of the corn, — and 'tis here that the yellow fairy comes to paint the ears, — while down on the floor, with arms stretched to form as large a circle as possible, each child in the second section represents a pumpkin, and awaits the coming of the orange fairy.

The color fairies dramatized in a kindergarten, Milwaukee, Wis.

Another group represents a row of plum trees where the purple fairy does her work. To represent the fruit the children raise their arms, touching the thumb and forefinger of one hand to form one plum.

The children in the fourth group represent grape vines. The position of the body is upright with arms raised and hands drooping to represent the clusters of grapes for the blue fairy to paint.

Six children are chosen for the fairies and upon the head of each is placed a cap, made of one of the prismatic colors. The children then take their places in the order of the prism. The child wearing the red cap standing at the head of the line ; orange, next ; yellow, following orange ; green, behind yellow ; blue, back of green ; and purple at the end.

Each fairy is given a paint brush, and as the song is sung the little ones skip, in line, into the circle, where the fruits await their coming.

The red fairy then hastens to the orchard to paint the apples. The

orange, to the pumpkins, where her work is to be done. The yellow fairy paints the ears of corn and the blue fairy paints the grapes. Among the plum trees the purple fairy is at work, while the green fairy, whom, we know, worked hard during the spring and summer, finds a place to rest, and there falls asleep.

At a given signal the fairies then take their places in the line and while the song is again being sung, they skip away.

There are 180 children in this kindergarten, 90 at each morning and afternoon session. Three teachers. Ninety are in the circle at one time playing the game.

The children take turns in being the fairies, one time one is a grape vine, and another time one is an apple tree.

The pumpkins are on the ground in the cornfield being painted, etc.

The teachers say this game helps very materially in teaching color and also in modeling in clay and in the painting lessons where the children paint vegetables and fruits.

I am also sending you a picture I had taken of the children in the kindergarten playing the game.

Very truly yours,

Ida Hood Clark.

Bellows Falls, Vt.

My dear Mr. Bailey:

Under separate cover I am sending you a few specimens of work done in a fourth grade several years ago.

A large wood pile near the schoolhouse furnished specimens. This work was not done under my direction or suggestion, but that of the regular teacher, who was a genius.

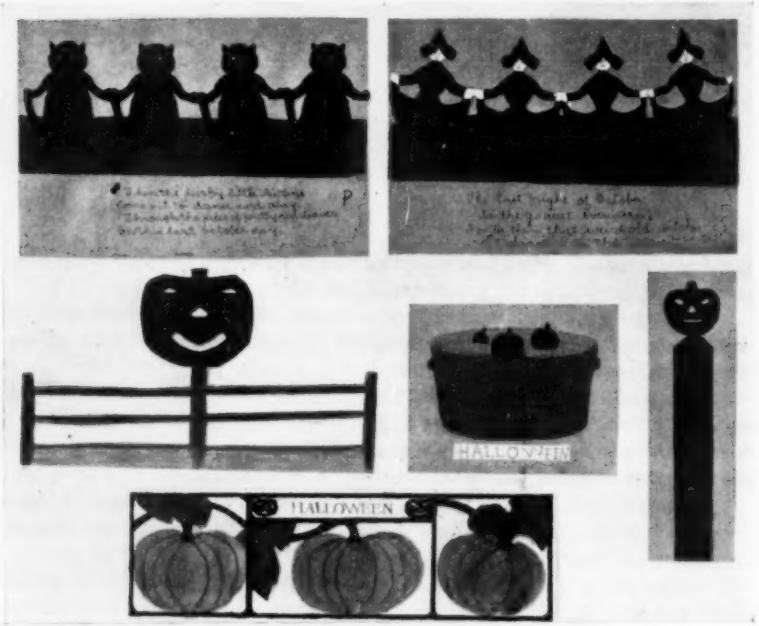
This teacher had no talent whatever as far as doing anything herself. but she had the knack of making her pupils see things for themselves, and they would gladly try over and over, on the little scraps of paper she allowed them to have, to get the results she desired.

Thinking perhaps these "chips" would be interesting to you I have remounted a few of those I have left, hoping that they may offer a suggestion in color study.

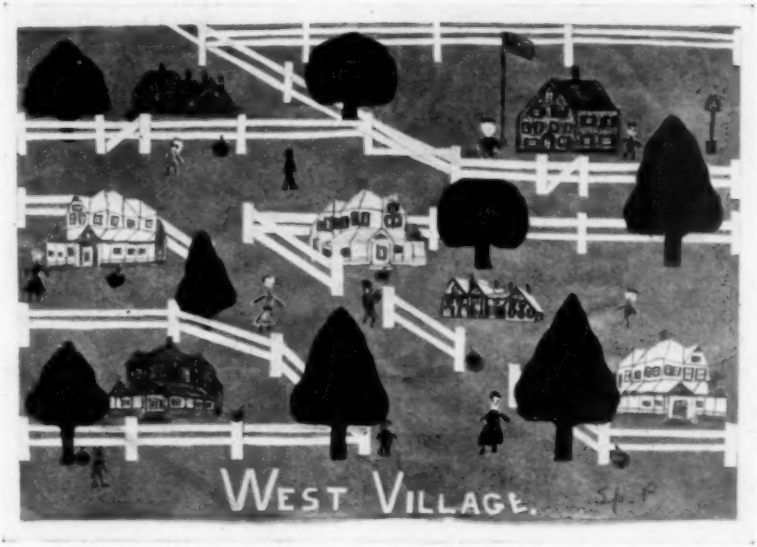
Very truly yours,

Mary E. Baker.

Reproductions of drawings in color by fourth grade pupils, from models furnished by the wood pile.



Hallowe'en drawings under the direction of Elva Alexander, Oxford, Pa.



The story of Hallowe'en as told by children twelve and thirteen years of age, Gill, Mass.

Oxford, Pa.

Dear Mr. Bailey :

We had such a good time doing these Hallowe'en drawings that I decided to send some of the results to you ; thinking that perhaps some of them might be useful. The children of the second grade are not represented. I am so hurried in making trains that I do not have time to select drawings. I am sorry I could not include some other examples of work for the month.

The Kennett children were so much interested in seeing the Hallowe'en drawing by Vernon Brock in the October School Arts Book that they worked very hard on these.

Sincerely yours,

Elva Alexander.

Hallowe'en
Hallowe'en always comes on October 31.
Fairies like to play tricks on Hallowe'en night. Brownies and
Horrah for Hallowe'en!

1. A border of toned paper cut by Kathleen Cousins, first grade, Sioux City, Iowa. 2. A Hallowe'en language paper illustrated by Ida, first grade, Sioux City, Iowa. 3. A Hallowe'en greeting by G. M. D., grade V, Saxtons River, Vt.

In addition to the foregoing I have had reproduced herewith certain other Hallowe'en illustrations which came to me last year from various sources. In several cities in this country where the outdoor pranks of the young people became unbearable, the older people of the city have organized to celebrate Hallowe'en with the children, to the great delight of all concerned, and the entire elimination of the objectionable features.— Editor.

Decorative designs by Robin Cogdal, seventh grade, St. Charles, III.

THE ARTS LIBRARY

BOOK REVIEWS AND NOTES

Progressive Lessons in Art Education. By Hugo B. Froehlich and Bonnie E. Snow. The Prang Educational Company.

The authors of this latest series of "drawing books" — "the effort to use both art and manual training in a more complete development of the children in their relationship to the affairs of life" — have succeeded in producing the most elementary of the three courses recently placed upon the market. The first steps in the painting of a landscape, a flower, an object; the first steps in paper cutting, paper construction, stenciling, and mechanical drawing, were never more clearly illustrated. Each of the eight books (one for each grade) contains two full-page plates in color, all of them excellent as examples of harmonious coloring. Among the pages especially commendable are the following: Book I, stick-candy holder, p. 25. Book II, toy furniture, pp. 14-16; valentine, p. 28. Book III, Indian objects, pp. 16, 17; furniture, pp. 18-21. Book IV, paper cutting, pp. 36, 37. Book V, surface designs, pp. 36-38. Book VI, applied design, pp. 34-39. Book VII, book cover, p. 11; stencils, pp. 36, 37. Book VIII, calendar, p. 16; notebook cover, pp. 34, 35. The books are open to criticism on some points, of course, but the criticism would come too late! The teacher who receives as a gift such superb reference material as the last pages of Books II, V, VI, and VIII, ought to be willing to overlook certain crudities elsewhere. The publishers believe that "a unification of the manual training and art education in the elementary schools is the proper solution of the educational industrial problem"; and hope that these books "will demonstrate that this theory is right, and will prepare the schools for a farther unification in a subsequent edition."

Atlas of the Color-Solid. By Albert H. Munsell. Charts 11 in. by 14 in. Wadsworth, Howland & Company, Boston. $2.25.

This atlas contains at the present time but two charts, but these are of extraordinary value. Chart A gives a neutral scale of nine values between black and white, perforated in such a way that the value of any color may be easily determined by comparison with the neutrals. "The personal bias plays no part in this measured scale of value. It

is established by a special instrument — known as the Munsell Photometer." Chart B contains the neutral scale and in addition equal steps in chroma or intensity of five selected colors. This chart is the only one manufactured which shows convincingly a series of progressive changes in the intensity of a color without changes in its hue or value. Both the charts are technical masterpieces. Only one who has experimented persistently in color can realize the enormous amount of work involved in the production of such charts, especially of Chart B showing "Branches of the Color Tree."

Shop Mathematics. By Edward E. Holton. 212 pp. 5 x 7½. Illustrated. The Taylor-Holden Company, Springfield, Mass. $1.25.

"The problems contained in this book are not theoretical or fictitious but such as actually occur in shop practice. For this reason they appeal to the practical man or boy and serve to arouse and hold his interest." The preliminary chapters dealing with force and energy and their applications are excellent. They help one to realize what force and energy mean, and how important a part they play in the activities of life. One aim of the author seems to be to familiarize the pupil with the principles on which machines are built and operated. The formulas are a valuable feature of the book. Evidently they are the results of patient search for reliable information correlated with practical experience. The author sticks closely to his subject, and the book is therefore somewhat limited in range. It is well arranged, well printed, and serviceably bound. Mr. Holton is the head of the department of machine shop practice in the Technical High School, Springfield, Mass. The book is one of the Haytol Series of Textbooks for Industrial Education, edited by Frank E. Mathewson.

Shop Problems in Mathematics. Breckenridge and Mersereau and Moore. 280 pp. 5 x 7½. Illustrated. Ginn & Company. $1.

This book aims to give a thoro training in the mathematical operations that are useful in shop practice, in carpentry, pattern-making, foundry-work, forging, and machine-work. Its mathematical scope in-

cludes everything of importance as far as the natural trigonometric functions. Among the good points of the book are the easily understood applications of geometry, the prevalence of sensible problems throughout, information well boiled down, and applied in a way which enables one to visualize the text. The chapter on the slide rule is so well done that it makes this "mystery" an every-day tool. Although the book covers a wide range it is sufficiently thoro to develop that mathematical intelligence which is one basis of leadership in the mechanical arts. The authors of this book are all connected in one way or another with the Stuyvesant High School, and Evening Trade School of New York City, and speak from a wide and varied practical experience.

Seventh Report of the Western Drawing and Manual Training Association, Minneapolis, 1910. 240 pp. 6 x 9. Illustrated.

This well printed volume contains in addition to the usual reports, lists of members, etc., the following papers: President's Address, by Robert A. Kissack; How to Study Pictures, by Henry Turner Bailey; The Grade Teacher's Art Problems, by May Gearhart; Problems Involved in the Introduction of Industrial Arts in Elementary Grades, by Harriet N. Winchell; Correlation of Art and Manual Training in Grade Schools, by Louis A. Bacon; Correlation of Art and Manual Training in High Schools, by Harry Wood; Bookbinding in the Grade Schools, by Oscar L. McMurry; Fine and Industrial Art in Public Education, by Walter Sargent; Industrial Education from the Viewpoint of Organized Labor, by Robert W. Selvidge; Relative Value of Subjects in Course of Study for Drawing, by Emma M. Church; Creative Picture Study, by Charlotte Reed; Design and Metal Work Correlated in Grammar and High Schools, by Arthur F. Payne; Is Manual Training Worth While? by Daniel Upton; Correlation of Household Arts with Other School Subjects, by Mary S. Snow; Domestic Science in Public Schools in Relation to the Pure Food Law, by Mrs. Alice Norton; Art as a Liberal Study, by Otto Heller; Art as a Liberal Study, by Joseph Jastrow; The Scope and Organization of Art Instruction in the A. B. Course, by Henrietta Clopath; the College Degree in Fine Arts, by Herbert R. Cross; The Future of the University Round Table, by Holmes Smith; Some Suggestive Features of Industrial Education in Germany, by Charles A. Bennett; Final Report of University Committee, by John S. Ankeney.

A copy of the report may undoubtedly be had by applying to Ira S. Griffith, Oak Park, Ill.

Elementary Syllabus, Manual and Household Arts, Agriculture.

Such is the drawn title of the pamphlet of 169 pages, issued recently by the State Education Department, Albany, New York, which contains the new courses in Drawing and Elementary Handwork by Royal B. Farnum, State Inspector. The courses are illustrated by means of ten full-page plates and twenty illustrations in the text, making perfectly clear the intent of the author. The new syllabus is definite, comprehensive, and suggestive. It tells what to do, without being narrowly dictatorial; it includes all the essential topics now closely correlated with drawing; it allows great freedom to the individual and places a premium upon individuality and original work. The pamphlet contains also an outline for Manual Training and Mechanical Drawing, an outline of cooking and sewing, and a special agricultural outline, all for the seventh and eighth years. Copies may be had through the Education Department, Albany.

THE PROCEEDINGS OF THE FIRST NATIONAL CONVENTION OF THE AMERICAN FEDERATION OF ARTS, a volume of 120 pages, has been issued as a supplement to Art and Progress. It contains among other reports the address of George deForest Brush on Modern Art Development, the Relation of Architecture to the People by Ralph Adams Cram, The Civic Theater by Percy McKaye, Civic Art by J. Horace MacFarland, The National Gallery of Art by Charles D. Walcott, the Trials of Congressmen Concerning Art Matters by Hon. James L. Slayden, The Ethics and Politics of Mural Painting by Edwin H. Blashfield, Government Art by Glenn Brown, Industrial Art by Dr. Haney, How to Reach the People by Edward T. Hartman, Municipal Art in Chicago by James William Pattison, The Art Development of Smaller Cities by Frank von der Lancken, What the Arts and Crafts Movement Has Accomplished by Frederick Allen Whiting, The International Congress on Art Education by James Frederick Hopkins, The Establishment of Art Museums by Robert Underwood Johnson, Art as a National Asset by Hon. Francis G. Newlands, The History of Art in the College Curriculum by T. Lindsay Blayney,

Museum Possibilities by Arthur Fairbanks, Archaeology as an Educational Factor in the Popular Appreciation of Art by Mitchell Carroll, and Art Education by H. K. Brush-Brown.

CAPTAINS OF INDUSTRY. By James Parton. Houghton, Mifflin & Company. A little book of selected sketches inspired by the development and spread of industrial education in this country and one might also say by the greater appreciation being accorded in these days to the heroes of peace. A hammer-maker, a blacksmith, an engine-driver, a clock-maker, journalist, philanthropist, steel-maker, baker, watch-maker, mechanic, merchant, telescope-maker, are celebrated in this readable little volume. Price, 25 cents. One of the Riverside Literature Series.

MIND AND VOICE is the name of the latest book on the principles and methods of vocal training by Dr. S. S. Curry, president of the Boston School of Expression. It is a book which if carefully studied would help a supervisor wishing to improve himself in the art of public address.

A DESCRIPTIVE LIST OF TRADE AND INDUSTRIAL SCHOOLS IN THE UNITED STATES is the title of Bulletin No. 11 of the National Society for the Promotion of Industrial Education. It was prepared by Edward H. Reisner, the secretary of the society. It brings together in brief form the main facts relating to the organization, methods of instruction and courses of study in the trade and industrial schools in the United States. It is a well printed pamphlet of 128 pages. It may be had through the secretary, 20 West 44th Street, New York City.

ETHICS FOR CHILDREN, by Ella Lyman Cabot, of the Massachusetts Board of Education, is a recent publication of the Houghton-Mifflin Company. The lessons to be inculcated each year are related to the school calendar. The material, chosen from a wide range, is selected with good judgment and utilized skilfully to promote the highest ethical ideals. It is a book that might well be used to enrich the opening exercises and to make them more influential.

THE BASKET WOMAN, a book of Indian tales for children by Mary Austin, is an attempt "to present certain aspects of nature as they

appear in the myth-making mood, that is to say, in the form of strongest appeal to the child's mind." It deals with the folk tales of the American Indian, some of which are transcribed directly, others were suggested by intimate acquaintance with living Indians, and by remarks they made upon occasion revealing their point of view. The book is published by Houghton, Mifflin & Company, at 60 cents. A knowledge of this volume would enable a teacher to enrich a weaving lesson and suggest topics for illustrative drawing.

VOCATIONAL EDUCATION, by Dr. David Snedden, Commissioner of Education for Massachusetts, is the subject of one of the recent Riverside Educational Monographs published by the Houghton-Mifflin Company, 35 cents. The little volume is a restatement of the well known views which the author has expressed in public addresses in Massachusetts and elsewhere during the last year.

AN ART-CRAFT INDEX TO THE AUGUST AND SEPTEMBER MAGAZINES

PERTINENT ARTICLES

A Few Siberian Baskets, M. L. Kissell, Palette and Bench, September, p. 320.

A Reading Journey Through Scotland, I, Historical Sketch, Josephine Helena Short, Chautauquan, August, p. 343.

Art and the Book, W. E. Sparkes, Practical Teacher, August, p. 104; September, p. 178.

A Simple Method of Binding Pamphlets, Gertrude Stiles, Palette and Bench, August, p. 291.

Blue Shadows in Nature and Art, II, J. W. Moran, International Studio, September, p. lxxvi.

Ceramic Art of the Pueblo Indians, The, Charles Francis Saunders, International Studio, September, p. lxvi.

Chameleons of the Sea: New Observations on Instantaneous Color Changes among Fishes, Charles Haskins Townsend, Century, September, p. 675.

Colour Work in School, VI, Sketching in Water Color, J. Young, Practical Teacher, August, p. 91.

Contemporary Architectural Sculpture in Color, William Walton, Scribner, September, p. 381.

Drawing in Public High Schools, Denver, Colorado, Charles M. Carter, Practical Teacher, August, p. 99.

Edward W. Redfield — Landscape Painter, J. Nilsen Laurvik, International Studio, August, p. xxix.

Embroidered and Leather Bags, Josephine Mahon, Palette and Bench, September, p. 313.

Enameling on Metal and the Making of Enamels, (cont.), Edmund B. Rolfe, Palette and Bench, August, p. 296; September, p. 316.

French, Daniel Chester, Edwin A. Rockwell, International Studio, September, p. lv.

History Lesson and Drawing, The, The Stuart Period, W. H. Elgar, Practical Teacher, August, p. 93.

Idealism in Modern English Art, Christian Brinton, Harper, August, p. 455.

Individuality in Stenciling, Mabel Tuke Priestman, House Beautiful, September, p. 114.

Japanese Art and Artists of To-day, I, Painting, Prof. Jiro Harada, International Studio, August, p. 98.

Lion in Art, The, Oliver Wheatley, Palette and Bench, July, p. 255.

Making of Sweet Grass Baskets, The, Alice Miriam Roundy, Palette and Bench, August, p. 293.

M. Evergood Blashki, Hanna Astrup Larsen, International Studio, August, p. xl.

Monotyping, Eva Marshall Woolfolk, Palette and Bench, September, p. 306.

Needlecraft for Primary and Secondary Schools, III, Ann Macbeth and Margaret Swanson, Practical Teacher, August, p. 108; September, p. 167.

New Block-Printing, The, Thomas H. Cooper, House Beautiful, August, p. 91.

Opportunities for Art Study in New York, Frank Fowler, Scribner, August, p. 253.

Plant Drawings from an Indian Cotton-Printer's Pattern Book, International Studio, September, p. 190.

Progressive Lessons in Design, II, Hugo Froehlich and Bonnie E. Snow, Palette and Bench, August, p. 281.
Relation of Modern American Art to That of China and Japan, The, Wilfred B. Shaw, Craftsman, August, p. 522.
Rush Furniture — Old and New, Virginia Robie, House Beautiful, September, p. 119.
Simple Furniture, Elizabeth Parker, House Beautiful, September, p. 124.
Simple Leather-Work for Schools, I, Agnes E. Farman, Practical Teacher, September, p. 182.
Sir William Quiller Orchardson, R. A., A. Leicester-Burroughs, International Studio, August, p. 87.
Some Pictures by Harvey Ellis, M. Louise Stowell, Palette and Bench, September, p. 300.
Suggestions for Constructive Work in Connection with Object Lessons, Felix T. Kingston, Practical Teacher, September, p. 175.
Suggestions for Use of Plate Borders, Maud M. Mason, Keramic Studio, August, p. 79.
Tintern and the Wye as a Sketching Ground, Alfred East, A. R. A., P. R. B. A., International Studio, August, p. 141.
Trophy Artistic, The, Frederick W. Coburn, Palette and Bench, September, p. 311.
Whistler Memorial at Lowell, The, Frederick W. Coburn, Palette and Bench, August, p. 277.
Whistler's First Drawings, Ida Clifton Hinshaw, Century, September, p. 736.
William Orpen, A New British Painter, Christian Brinton, Century, September, p. 657.
Woodstock School of Landscape Painting, The, Birge Harrison, Art and Progress, September, p. 316.

ILLUSTRATORS

Aldrich, George Ames, Harper, August, p. 374.
Alexander, John W., Printing Art, September, p. 34.
Arthurs, Stanley M., Harper, August, pp. 384, 390.
Aylward, W. J., Harper, August, pp. 354, 358, 392-403.
Bailey, Vernon Howe, Century, September, pp. 723-727.
Bayha, Edwin F., Ladies' Home Journal, September, pp. 16, 24.
Becher, Arthur, St. Nicholas, September, pp. 1013, 1016.
Benda, Wladyslaw T., McClure, September, p. 566.
Birch, Reginald, St. Nicholas, September, pp. 983, 987, 1005, 1007.
Blaisdell, E. Warde, Harper, August, p. 486.
Blashfield, A. D., Ladies' Home Journal, September, p. 17.
Blumenschein, Ernest L., Century, August, pp. 588-606; Scribner, August, pp. 198-208.
Booth, Hanson, Delineator, September, p. 159.
Both, Armand, Century, September, pp. 695-699.
Boyd, Harriet R., Delineator, September, p. 236; St. Nicholas, September, p. 988.
Boyd, John, Ladies' Home Journal, September, p. 19.

Brehm, George, Ladies' Home Journal, August, p. 9; September, p. 13.
Brinton, A. F., Keramic Studio, September, p. 97.
Brown, Arthur William, American Magazine, September, p. 697; Delineator, September, p. 169.
Brown, Helen Paxton, International Studio, August, p. 130.
Bull, Charles Livingston, McClure, August, pp. 417-425.
Burnett, M., Keramic Studio, September, p. 107.
Castaigne, Andre, McClure, August, frontispiece.
Caswell, E. C., Ladies' Home Journal, September, p. 43.
Cleland, T. M., American Magazine, September, pp. 619, 637.
Cole, Timothy, Century, September, frontispiece.
Cootes, F. Graham, Scribner, pp. 239-244.
Corot, J.-B.-C., Century, September, frontispiece.
Couse, E. Irving, Craftsman, September, frontispiece, pp. 621-624.
Craig, Frank, Delineator, August, p. 95; Scribner, August, p. 229; September, p. 329.
Crouch, A. Weir, Century, September, p. 735.
Deremeaux, Irma, Delineator, August, p. 88.
Dicksee, Herbert, St. Nicholas, September, p. 996.
Donaldson, Alice Willits, Keramic Studio, August, supplement.
Dunton, W. Herbert, Scribner, August, pp. 230-236.
East, Alfred, A. R. A., International Studio, August, pp. 141-147.
Edwards, Robert, McClure, September, frontispiece, pp. 563-565.
Ellis, Harvey, Palette and Bench, September supplement, pp. 300-304.
Ewing, Charles, Century, August, pp. 575, 578.
Fenderson, Mark, St. Nicholas, September, p. 1027.
Fisher, Harrison, Ladies' Home Journal, August, p. 5; September, cover design.
Flagg, James Montgomery, Delineator, August, p. 84.
Flameng, François, Century, August, p. 520.
Fogarty, Thomas, American Magazine, September, pp. 632-636; McClure, September, pp. 513-521.
Foster, Will, Delineator, August, p. 97; September, p. 167.
Foster, William Harnden, Scribner, September, frontispiece, pp. 331-336.
French, Daniel Chester, International Studio, September, pp. lvii-lxii.
Gassaway, Katharine, Outlook, August, pp. 642, 643.
Gleason, J. Duncan, Ladies' Home Journal, September, p. 7.
Gleeson, Joseph M., Outlook, August, pp. 668-676.
Grant, Gordon, St. Nicholas, September, pp. 972, 975.
Green, Elizabeth Shippen, Harper, August, pp. 444-453.
Greuze, J.-B., Printing Art, September, frontispiece.
Groesbeck, Dan Sayre, McClure, September, pp. 538-543.
Guerin, Jules, Century, August, pp. 565, 569.
Hambidge, Jay, Century, August, pp. 615, 622.
Hatherell, W., R. I., Harper, August, pp. 467, 470; McClure, September, pp. 479-482.
Herford, Oliver, Century, August, pp. 635, 636; September, pp. 799, 800.
Hill, C. T., St. Nicholas, September, p. 1002.
Hitchcock, Lucius W., Harper, August, pp. 428, 432.

Huard, Charles, Ladies' Home Journal, September, p. 15.
Hyde, Helen, Delineator, August, p. 89.
Ivanowski, Sigismond de, Century, August, p. 486; Delineator, September, frontispiece.
Jackson, Fred. W., International Studio, September, p. 231.
Keller, Arthur I., Century, August, p. 543; September, p. 721.
King, Martha Feller, Keramic Studio, September, p. 98.
King, W. B., Ladies' Home Journal, September, p. 10.
Kinneys, The, Century, August, p. 549.
Kirk, M. L., Printing Art, September, p. 24.
Landseer, Sir Edwin, Suburban Life, August, p. 87.
Lester, Charles F., St. Nicholas, September, pp. 1020, 1021.
Lutz, E. G., St. Nicholas, September, p. 1019.
Lynch, Albert, Ladies' Home Journal, August, cover design.
Macbeth, Ann, International Studio, August, p. 125.
MacDonall, Angus, Harper, August, p. 485.
Masters, F. B., St. Nicholas, September, pp. 999, 1000.
Meeker, Edwin J., Outlook, August, pp. 648, 650.
Melchers, Gari, Craftsman, August, frontispiece, p. 526.
Meylan, Paul, Delineator, August, pp. 86, 87.
Moore, Herbert, Delineator, September, p. 238.
Morgan, Wallace, Delineator, September, p. 158.
Newell, Peter, Harper, August, p. 484.
Newman, George A., Ladies' Home Journal, September, p. 70.
Nichols, Hobart, Century, August, cover design.
Oberhardt, William, Delineator, August, p. 85; September, p. 166.
Orchardson, W. Q., International Studio, August, frontispiece, pp. 88-98.
Orpen, William, Century, September, pp. 658-662.
Parrish, Maxfield, Century, August, frontispiece; Printing Art, September, p. 36; Scribner, August, frontispiece.
Pearson, Joseph T., Jr., Palette and Bench, August, supplement.
Pegram, Fred, Scribner, August, pp. 187-196.
Peixotto, Ernest, Scribner, September, pp. 362-368.
Peters, C. F., Century, August, pp. 624-630; Delineator, September, pp. 162, 163.
Pierson, Alden, Outlook, August, pp. 637, 638, 641.
Potts, W. Sherman, Scribner, September, p. 349.
Preston, May Wilson, Delineator, August, p. 91; September, p. 161; Harper, August, pp. 361-369; McClure, August, pp. 366-372.
Pyle, Howard, Harper, August, frontispiece, pp. 327-339.
Raleigh, Henry, Century, August, p. 638; September, pp. 764-770, 796; McClure, August, pp. 402-413.
Raven-Hill, L., Outlook, August, pp. 678-694; September, pp. 977-989.
Redfield, Edward W., International Studio, August, pp. xxx-xxxvi.
Reese, Emily Shaw, Scribner, September, cover design.
Relyea, C. M., Ladies' Home Journal, August, p. 15; St. Nicholas, September, frontispiece, pp. 965, 993, 995.
Reuterdahl, Henry, American Magazine, September, cover design; Outlook, September, cover design.

Robinson, David, American Magazine, September, pp. 615-617.
Rosenmeyer, B. J., Ladies' Home Journal, August, p. 7; Delineator, September, p. 165.
Ross, Edith Alma, Keramic Studio, September, pp. 99-101.
Rowe, Clarence H., St. Nicholas, September, p. 971.
Runcieman, Miss, International Studio, August, p. 130.
Rush, Olive, Ladies' Home Journal, September, p. 12.
Russell, W. W., International Studio, September, frontispiece, pp. 171-177.
Schabelitz, R. F., American Magazine, September, pp. 657-664.
Schoonover, Frank E., McClure, August, pp. 353-358; Scribner, August, pp. 211, 212.
Shaver, J. R., Century, August, pp. 514-518; September, p. 795.
Shinn, Florence Scovel, McClure, September, pp. 487-493.
Sichel, Harold, Delineator, September, p. 236.
Sorolla, Printing Art, August, p. 436.
Spear, Gil, McClure, September, pp. 570-579.
Stearns, Fred, House Beautiful, August, cover design; September, cover design.
Steele, Frederic Dorr, Delineator, August, pp. 94, 130.
Stevens, W. D., Harper, August, pp. 405-414.
Stewart, Jeanne M., Keramic Studio, September, p. 91.
Strothmann, F., Harper, August, pp. 479-482.
Taber, I. W., St. Nicholas, September, p. 1052.
Varian, George, St Nicholas, September, pp. 1023, 1025.
Von Glehn, G., St. Nicholas, September, p. 969.
Wager, Rhoda, International Studio, August, p. 130.
Walker, A. B., Harper, August, p. 483.
Whistler, J. McNeill, Century, September, pp. 736-741.
Whistler, James McNeill, Palette and Bench, August, pp. 278, 279.
Williams, J. Scott, American Magazine, September, pp. 586-599.
Wireman, Katharine Richardson, Ladies' Home Journal, September, p. 27.
Woodman, Alice E., Keramic Studio, September, p. 95.
Woolfolk, Eva Marshall, Palette and Bench, September, pp. 305-308.
Wright, George, Scribner, August, pp. 177-184.
Wright, George, Scribner, September, pp. 351-361.
Wyeth, N. C., Scribner, August, p. 164.
Yohn, F. C., Scribner, September, pp. 305-312.

COLOR PLATES

A Group of Geese, Joseph T. Pearson, Jr., Palette and Bench, August, supplement.
Apple Blossoms, Alice Willits Donaldson, Keramic Studio, August, supplement.
A Street in the Native Quarter, W. J. Aylward, Harper, August, p. 392.
Banner, Ann Macbeth, International Studio, August, p. 125.
Beach of Valencia by Morning Light, Sorolla, Printing Art, August, p. 436.
Chepstow Castle on the Wye, Alfred East, A. R. A., P. R. B. A., International Studio, August, p. 143.

Couch Cushions, Elizabeth M. Glantzberg, Ladies' Home Journal, September, p. 40.
Cover Design, Harrison Fisher, Ladies' Home Journal, September.
Cover Design, Albert Lynch, Ladies' Home Journal, August.
Cover Design, Hobart Nichols, Century, August.
Cover Design, Emily Shaw Reese, Scribner, September.
Cover Design, Henry Reuterdahl, American Magazine, September; Outlook, September.
Cover Design, Fred Stearns, House Beautiful, September.
Cover Design, Delineator, August.
Early Morning, Florence, Fred W. Jackson, International Studio, September, p. 231.
Embroidered Sideboard Cloths, Helen Paxton Brown, Rhoda Wager, and Miss Runciemann, International Studio, August, p. 130.
Flowering Almond, E. E. Daniell, Keramic Studio, September, supplement.
Girl with the Broken Vase, The, Greuze, Printing Art, September, frontispiece.
Hansel and Gretel, M. L. Kirk, Printing Art, September, p. 24.
"In the wake of their disturbance came the devouring, clamoring, wedge-formation of steam shovels," William Harnden Foster, Scribner, September, p. 334.
"No more 'mid low Achaean hills echo the flutes of Pan," Maxfield Parrish, Scribner, August, frontispiece.
"Out in the channel the dredges clanked and splashed in the moonlight," William Harnden Foster, Scribner, September, frontispiece.
Pallas Athene leading the ships of the Argonauts, Harvey Ellis, Palette and Bench, September, supplement.
Pay-stage, The, N. C. Wyeth, Scribner, August, p. 164.
Plant Drawings from an Indian Cotton-Printer's Pattern Book, International Studio, September, p. 191.
Pool of Hezekiah, Jerusalem, The, Jules Guerin, Century, August, p. 569.
"Prints," W. W. Russell, International Studio, September, frontispiece.
Queen-trigger Fish, The, Charles R. Knight, Century, September, p. 677.
Rugs, Portiere, Bed-cover, Couch-cushion, Arnold G. Talbot, Ladies' Home Journal, September, p. 41.
"Seven green pools at Cintra," Maxfield Parrish, Century, August, frontispiece; Printing Art, September, p. 36.
"Some of the men . . . came sailing over in a cement-bucket," William Harnden Foster, Scribner, September, p. 331.
"There stood the fairy prince," Howard Pyle, Harper, August, frontispiece.
"They had another premature explosion up there yesterday," William Harnden Foster, Scribner, September, p. 336.
Wailing-place of the Jews, Jerusalem, The, Jules Guerin, Century, August, p. 565.
"Where east and west meet," W. J. Aylward, Harper, August, p. 402.

NOTABLE DESIGNS

Baskets, Ladies' Home Journal, August, p. 31; sweet grass, Palette and Bench, August, pp. 294, 295; Siberian, Palette and Bench, September, pp. 320-322.

Block-printing, curtains, etc., House Beautiful, August, pp. 91, 92.
Book Cover, Leather, Practical Teacher, September, pp. 182, 183.
Book Plates, Inland Printer, August, p. 714.
Borders, Printing Art, August, pp. 431-452.
Carved Panels, International Studio, September, p. lxiii.
Carved Wooden Candlesticks, International Studio, September, p. lxiv.
Chair, Hepplewhite, House Beautiful, August, p. 83.
Chairs, Palette and Bench, September, p. 319.
Cheval Glass, Craftsman, August, p. 601.
China Decoration, Keramic Studio, September, pp. 90-106.
China, Designs for, Keramic Studio, August, pp. 68-83.
Couch Cushions, International Studio, August, pp. 130-132; Ladies' Home Journal, August, p 45; September, pp. 40, 41.
Cross-stitch Embroidery, Ladies' Home Journal, August, p. 45.
Designs from Plant Forms for Printed Cotton, International Studio, September, pp. 190-195.
Desk Set, Craftsman, September, pp. 706, 707.
Dressing Cabinet, Craftsman, September, p. 705.
Embroidery, International Studio, August, pp. 124-135; pincushions, Ladies' Home Journal, August, p. 21; Bags, Palette and Bench, September, pp. 313, 314.
Enamel Thimbles, Cup, Spoon, Chain, Box, Palette and Bench, August, pp. 297, 298.
Flanders Furniture, Suburban Life, August, p. 95.
Furniture, House Beautiful, September, pp. 124, 125.
Hand Loom Weaving, House Beautiful, September, p. 100.
Hat and Coat Rack, Copperwork, Craftsman, September, p. 706.
Leather Bags, Palette and Bench, September, pp. 314, 315.
Lighting Fixtures, Lamps and Lanterns, Craftsman, September, pp. 703, 704.
Metal Pans, Cup, Craftsman, August, p. 602.
Monograms, Keramic Studio, August, p. 85.
Monument, Soldiers and Sailors, Art and Progress, September, p. 323.
Needlework, Ladies' Home Journal, August, p. 23; Practical Teacher, August, pp. 108-112.
Page Borders, Printing Art, September, pp. 33-40.
Paper Knives, Craftsman, September, pp. 709, 710.
Pendants, Craftsman, September, pp. 709, 710.
Pergolesi Cabinet for China, House Beautiful, August, p. 83.
Plant-stand, Craftsman, August, p. 600.
Pocket Leather Case, Practical Teacher, September, p. 183.
Portière, Ladies' Home Journal, September, p. 41.
Pottery, International Studio, August, pp. xlix-lii, of the Pueblo Indians, International Studio, September, pp. lxvi-lxxi.
Rugs, Ladies' Home Journal, August, p. 31; September, p. 41.
Sideboard Cloths, International Studio, August, pp. 130.
Silver Spoons, Palette and Bench, August, p. 286.
Stained Glass Windows, Art and Progress, September, pp. 326, 327; International Studio, August, pp. xxxvii-xxxix.

Stenciling, House Beautiful, September, p. 115.
Stenciled Curtains, Ladies' Home Journal, September, p. 72.
Table and Chairs, Ladies' Home Journal, September, p. 69.
Table Covers, International Studio, August, pp. 133, 134.
Tail-piece, Century, September, p. 735.
Tatting, Ladies' Home Journal, August, p. 46; September, p. 31.
Tea Table with Copper Tray, Craftsman, August, p. 602.
Temperance Banner, International Studio, September, p. 249.
Tooled Leather Bag, Delineator, September, p. 211.
Wall Cabinet, Craftsman, September, p. 707.

THE SCHOOL ARTS GUILD

I WILL TRY TO MAKE THIS PIECE of WORK MY BEST

The Leader of The School Arts Guild for 1909-1910 is Reginald Oppy, of the Quarry Hill School, Westerly, R. I. Reginald contributed his first drawing in October, 1907. After November, 1907, he sent nothing more until April, 1910. His record of progress is marked by his having received a Fourth Prize, a Third Prize, an Honorable Mention, and lastly First Prize in June, 1910. This first prize was awarded upon a design for a canoe pillow, reproduced herewith, in accordance with a suggestion made

in the May number of The School Arts Book. The kingfisher motive has been cleverly adapted to the conditions. The unit has been used with good judgment to produce a decorative pattern well adjusted to the space and pleasing in effect. The design was stenciled in dull orange-red upon a golden-brown denim, two analogous tones well related to the color of a canoe interior. The following letter has been sent to Master Oppy:

This certifies that in the Monthly Contests in Drawing and Design maintained by The School Arts Book during the school year 1909-1910 and participated in by about 20,000 school children in the United States, Reginald Oppy, of the seventh grade in the Quarry Hill School, Westerly, R. I., won the largest number of awards and by virtue of his increasingly excellent work is entitled to the honor of Leader in The School Arts Guild. Should Master Oppy, after completing his public school courses, decide to enter an Art School, this record is worthy to stand as a testimonial to his ability as a student, and as a recommendation to the Art School authorities.

For the Jury of Awards,
HENRY TURNER BAILEY,
Editor of The School Arts Book.

Please remember the regulations.

Pupils whose names have appeared in The School Arts Book as having received an award, must place on the face of every sheet submitted thereafter a G, for (Guild) with characters enclosed to indicate the highest award received, and the year it was received, as follows:

These mean, taken in order from left to right, Received First Prize in 1905; Second Prize in 1906; Third Prize in 1907; Fourth Prize in 1906; Mention in 1907. For example, if John Jones receives an Honorable Mention, thereafter he puts M and the year, in a G on the face of his next drawing submitted. If on that drawing he gets a Fourth Prize, upon the next drawing he sends in, he must put a 4, and the date and so on. If he should receive a Mention after having won a Second Prize, he will write 2 and the date on his later drawings, for that is the highest award he has received.

☞ Those who have received a prize may be awarded an honorable mention if their latest work is as good as that upon which the award is made, but no other prizes unless the latest work is better than that previously submitted.

☞ The jury is always glad to find special work included, such as language papers upon subjects appropriate to the month, home work by the children of talent, examples of handicraft, etc.

☞ Remember to have full name and mailing address written on the back of each sheet. Send the drawings flat.

☞ If stamps do not accompany the drawings you send, do not expect to obtain the drawings by writing for them a month later. Drawings not accompanied by return postage are destroyed immediately after the awards are made.

☞ A blue cross on a returned drawing means "It might be worse!" A blue star, fair; a red star, good; and two red stars, — well, sheets with two or three are usually the sheets that win prizes and become the property of The National Arts Publishing Company.

JUNE CONTEST

AWARDS

First Prize, Book, a box of Crayola, large size (Binney & Smith), and Badge with gold decoration.

*Reginald Oppy, VII, Elm Street School, Westerly, R. I.

Second Prize, a box of Crayola, small size (Binney & Smith), and Badge with silver decoration.

* Angela Crowley, VIII, Dominican Academy, Fall River, Mass.
Dora Dodge, Dalton, Mass.
Arthur Springer, VII, Franklin School, Englewood, N. J.
J. S., Elementary Manual Training School, Philadelphia, Pa.
Grace Woodward, VII, McLaughlin School, Goldfield, Nevada.

* A winner of honors in some previous contest.

Third Prize, a copy of Blackboard Drawing (The Davis Press), and Badge.

Lillian Anderson, VIII, P. S. 130, Brooklyn, N. Y.
Elvin Baker, VIII, Elm Street School, Westerly, R. I.
Inez Bristow, VII, Lincoln School, Englewood, N. J.
Victor Duquette, III, West Groton, Mass.
Mary Langan, VIII, Highland School, Revere, Mass.
* Ernest Panciera, IV, Quarry Hill School, Westerly, R. I.
David K. Pierce, VII, Elm Street School, Westerly, R. I.
Harry Sorg, VIII, Dalton, Mass.
Ellen Splain, VIII, McLaughlin School, Goldfield, Nevada.
Manvel Zinn, 139 S. Ritter Street, Indianapolis, Ind.

Fourth Prize, the Badge.

Rachel Barber, VII, Elm Street School, Westerly, R. I.
Hazel R. Brownson, IV, Craneville School, Dalton, Mass.
Ruby E. Bruffee, VI, Patten School, Shelburne, Mass.
Margaret Buffum, VIII, Elm Street School, Westerly, R. I.
Grace Burgner, II, South School, Dalton, Mass.
Leona Calleson, P. S. 130, Brooklyn, N. Y.
William Champness, III, White Rock School, Westerly, R. I.
Blanche Collet, Dominican Academy, Fall River, Mass.
Mildred Currie, IV, Niantic School, Westerly, R. I.
Cora Currier, III, South School, Peabody, Mass.
Anna Einhorn, V, Liberty School, Englewood, N. J.
James J. Horan, III, East Pepperell, Mass.
Esther Hume, II, Dalton, Mass.
Isabelle Kelly, Dalton, Mass.
Francis LaFortune, Winchendon, Mass.
Edith Largent, St. Joseph Academy, Guthrie, Okla.
Marcella Maher, VII, P. S. 130, Brooklyn, N. Y.
Helen McConaughy, VIII, P. S. 130, Brooklyn, N. Y.
Helen Meiner, I, Sidney, N. Y.
Gladys C. Moore, V, Boxford, Mass.
Benjamin Morrys, IV, Winter Street School, Exeter, N. H.
Thomas Pignatario, VI, Niantic School, Westerly, R. I.
Leonard Roffey, VII, Broadway Grammar School, Rockport, Mass.
Jean Sanborn, VIII, W. Boxford, Mass.
H. S., Elementary Manual Training School, Philadelphia, Pa.
Walter Watkins, VIII, Carson Ave. School, Dalton, Mass.
Errol Wheeler, IV, Centre School, Dalton, Mass.
Arthur Woodmansee, 5460 East Washington Street, Indianapolis, Ind.
Theresa York, IX, Rockport, Mass.

* A winner of honors in some previous contest.

HONORABLE MENTION

Verner E. Bancroft, Pepperell
Thelma Bartlett, Dalton
Gladys Brazill, Fall River
Agnes Brickner, Guthrie
Helen M. Brown, Boxford
Dannie Carey, Westerly
Edward Carlson, Rockport
*Will Carnaghan, Westerly
Franklin Canlett, Rockport
Florence C. Chase, E. Pepperell
Adelia Chisson, Exeter
Gladys Controy, Dalton
Dorothy Cooke, Goldfield
Anna Cowlin, Dalton
Mary Crew, Dalton
Thomas Cummings, Peabody
Stanley Davis, Dalton
Gertrude F. Derby, Englewood
Clementina DeRocco, Westerly
*Lillian Dionne, Westerly
Catherine Driscoll, E. Pepperell
Edith Dulles, Englewood
William Farrell, Westerly
Rose Ford, Dalton
Marie M. George, Guthrie
Raymond E. Gillis, Boxford
*Mary Gomena, Westerly
Bernice M. Hagerty, E. Pepperell
Elizabeth Heath, Revere
Frederic Hindle, Englewood
*Catherine Howard, Westerly
*R. H., Philadelphia
Irving Kezar, W. Groton
Albert Konow, Brooklyn
Dorothy Landmesser, Wilkes-Barre
*Thomas Lavelle, Wilkes-Barre
George Little, Goldfield
Helmi Leoma, Rockport
Charles Mackinnon, Brooklyn
Madeleine Macomber, Fall River
Louise Bryant Marshall, Rockport
Beatrice Muerl, Englewood
Madeleine Ney, Fall River
Edna Niblock, Westerly
Mary O'Connell, Dalton
Margaret Owen, Brooklyn
*Antonio Panciera, Westerly
Camelia Papalia, Westerly
Allen Peirce, Brooklyn
Adrian Prottiero, Goldfield
Katherine Quinlan, Dalton
*Martin Randall, Westerly
William Reardon, Dalton
William Reutter, Brooklyn
John F. Robinson, Revere
M. R., Philadelphia
Deane Sanborn, W. Boxford
Arthur C. Sears, Dalton
Marie Sheridan, Wilkes-Barre
Rupert E. Smith, Shelburne
Helen Stevenson, Brooklyn
Hannah Stillman, Westerly
Jesse Strait, Brooklyn
Edna Sullivan, Fall River
Gertrude Sweisberger, Englewood
H. S., Philadelphia
Arnold Tappin, Winchendon
Oscar Taylor, Rockport
*Gabrielle Thibault, Fall River
Rose Vachon, Fall River
William Ward, Sidney
Mary Weisbender, Guthrie
Gordon White, Winchendon
Pauline Whitten, Guthrie
John Whittier, W. Boxford
Nora Williams, Westerly
Grace Woodward, Goldfield
Mildred Zabriskie, Englewood
Josephine——, Goldfield

* A winner of honors in some previous contest.

PROFESSIONAL NOTES

Miss Annette J. Warner, for some time director of the art department of the State Normal School, Fitchburg, Mass., has accepted the principalship of the John Herron Art Institute School of Art, Indianapolis. As supervisor of drawing in Pittsfield, Mass., and as a normal instructor, Miss Warner has made an enviable record. In power to inspire those who come under her instruction, and to promote art educational interests in a community, she has few if any superiors. Miss Warner brings to her new position the training furnished by the Massachusetts Normal Art School and private instructors of national reputation, supplemented by foreign travel and wide experience in teaching in every grade of school, primary, grammar, high, and normal. The city of Indianapolis and the trustees of the Institute are to be congratulated upon securing the services of so efficient a leader.

Mr. Ludwig Frank, formerly instructor in the Mechanic Arts High School, Boston, is now the supervisor of manual training for the city of Fitchburg, Mass.

Miss Harriet Whitaker, special teacher of drawing, Springfield, Mass., has resigned her position to assume the duties of instructor in drawing and design, Quincy, Mass.

Mr. Harold Haven Brown, of the Stuyvesant High School, New York, has been given a year's leave of absence for the pursuit of special lines of professional work.

Handicraft for September contains among other good things an article by Theodore Hanford Pond, on the handicrafts in connection with art training, and an article by Miriam B. Pearce on tooled leather.

Miss Nellie M. Pairpoint, formerly of Fitchburg, has accepted a position as teacher of drawing, Providence, R. I.

The ten drawings which were awarded the first and second prizes in each class in the contest inaugurated by the American Crayon Company are being reproduced in color and will be mailed to any address upon the receipt of four cents in stamps.

Mr. C. Edward Newell, Supervisor of Drawing and Handicraft, Springfield, Mass., has issued an orderly course of study arranged by months, by grade, and by subject, with a supplementary chapter on picture study.

The Mural Proof Studio, Brooklyn, N. Y., is constantly adding to its list of mural proofs for schoolroom decoration. Three have been recently added illustrating events in the discovery of America, four illustrating the crafts, three illustrating the study of Rip van Winkle, and three having to do with American naval history.

Mr. Eben F. Comins will open his classes in drawing from life, portrait painting, and pure design at the Fenway Studios, Boston, on October eighth. The work of the pupils of Mr. Comins has a certain simplicity and dignity of manner quite out of the ordinary. Results which he secured in Miss Wheeler's School, Providence, R. I., attracted the attention of the art educational authorities in France and some of that work formed a part of the exhibit of secondary work sent recently by Mr. James Hall, chairman of the American Committee for the London Congress, to M. Guebin, Chief Inspector in Art Education for the city of Paris.

Supervisors of drawings interested in promoting the city beautiful should be in touch with the American Civic Association, Union Trust Building, Washington, D. C. Three recent reports on city planning by Mr. John Nolen, of Cambridge, Mass., may now be had through the Civic Association at prices ranging from fifty cents to a dollar and a quarter.

Those who have to furnish studios and workshops where drawing and drafting are to be carried on should have Catalog D issued by the Washburn Shops, of the Worcester Polytechnic Institute, Worcester, Mass.

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CLASSIFIED INDEX TO ADVERTISERS

Page

BOOKS

Atkinson, Mentzer & Grover . . ii-iii
Schuyler Bull xxiii
Council of Supervisors viii
Ellis Co., Geo. H. xiii
Ginn & Co. v
Heath & Co., D. C. i
Jepson, George vi
Manual Arts Press vii
National Arts Publishing Co. x-xi-xii-xxix
Pratt Institute viii
Silver Burdett & Co. . . . . Cover iv
Taylor-Holden Co. iv
Western Drawing and Manual Training Ass'n xiii

CRAYONS

American Crayon Co. . Cover ii xxviii
Binney & Smith . . . . . Cover ii
Joseph Dixon Crucible Co. xx
Franklin Crayon Co. xxi
Wadsworth, Howland & Co. . . xxviii

DRAWING BOOKS

Atkinson, Mentzer & Grover . . ii-iii
D. C. Heath & Co. i
Taylor-Holden Co. iv

DRAWING PAPER

Mittineague Paper Co. xxii

FANCY LEATHERS

W. A. Hall xxi

LETTERING

Artcraft Shop xix
Schuyler Bull xxiii

LOOMS

Worcester Textile Crafts Guild . . xxiii

MANUAL TRAINING MATERIALS

Hammacher, Schlemmer & Co. . . xxiii
J. L. Hammett Co. xx

Page

PENCILS

Eagle Pencil Co. xxiv

PICTURES

Perry Pictures Co. ix

PRINTS

Bureau of University Travel . . ix
Shima, E. T. ix

SCHOOLS OF ART AND INDUSTRY

School of Applied Art, Battle Creek . xiii
Eric Pape School of Art . . . xiv
Industrial Art, Philadelphia . . . xv
New York School of Fine & Applied Art xv
Pratt Institute Art School . . . xvi
School of Industrial Arts, Trenton . xvi
Institute of Mechanic Arts . . . xvi
Worcester Museum Arts & Crafts School xv
Mechanics Inst. Applied and Fine Arts, Rochester xvi

STENCIL MATERIAL

American Color Co. xxv
Worcester Textile Crafts Guild . xxiii

TEACHERS' AGENCIES

Midland Specialists' Bureau . . xvi

TOOLS

Belcher & Loomis Hardware Co. . xxi
Hammacher, Schlemmer & Co. . . xxiii
Geo. R. Zimmerman xxiii

WATER COLORS

American Crayon Co. xxviii
Milton Bradley Co. xviii
F. W. Devoe & C. T Raynolds Co. xix
Philip Ruxton, Inc. xxiv
Wadsworth, Howland & Co. . . xxviii

WEAVING, BASKETRY, AND SUPPLIES

Garden City Educational Co. . . xxi
Worcester Textile Crafts Guild . . xxiii